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DOMESTIC ENGINEERING

The Plumbing and Heating Weekly

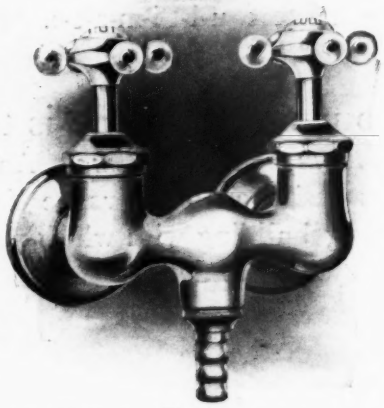

Fig. C2.
No. 3 Nickel Plated Compression Double Bath Cock with Four Ball China Index Handles.

Fig. Q2.
No. 5 Nickel Plated Quick Compression Double Bath Cock with China Handles in Front.

NORBRASCO

Increased Popularity

The year just closing marks an important era in the history of "Norbrasco" Plumbers' Brass Goods. The trade is demanding, more and more, the better grade of brass products—hence the increased popularity of the "Norbrasco" Line.

We take this occasion to express our sincere appreciation of the generous patronage given us this year and to ask our customers, both old and new, for a continuance of their business. Our usual system of careful service and prompt delivery will be maintained.

Your jobber can supply you with "Norbrasco" Products.

Northern Brass Mfg. Company

Largest Manufacturers of Bath Cocks and Supply Pipes in the World

WAUKEGAN, ILLINOIS

KEWANEE

For Any Big Building

It doesn't make a diff-of-a-bitterence what kind of a building. Factories, warehouses, apartments, schools, churches, theatres, all need heat. And if it is a *big* building a Kewanee is the best boiler that can be put into it.

Has anyone the idea that Kewanee Boilers are *not* adapted for any kind of a big heating job? If so, get rid of it, because it is not a fact.

If you could sit on a high mountain and rip the roofs from the best buildings *of all kinds* you would find Kewanee Boilers in most of them.

And it is an easy boiler to operate. It is as fool proof as any boiler can be made. It doesn't require a college graduate to operate it. Just ask any man who has ever operated a Kewanee what boiler he prefers. He will tell you—Kewanee. He likes it because it is easy to operate.

Almost any boiler may *look* good when it is doing nothing. But the real question is what will the boiler do when the wintry winds are blowing. That is the real test—the test u-l-t-i-m-a-t-e.

Your one safe cue is to *play trumps every time.* And always insist on a Kewanee for every big building with which you have anything to do.

KEWANEE BOILER COMPANY

KEWANEE, ILL.

Steel Heating Boilers, Radiators, Tanks, Water Heating Garbage Burners

CHICAGO—Market and Washington Sts.
NEW YORK—47 W. 42nd St.
MINNEAPOLIS—708 Builders Exchange
MILWAUKEE—Mer. & Mfrs. Bk. Bldg.
DES MOINES—315 Hubbell Bldg.
KANSAS CITY—2014 Wyandotte St.
INDIANAPOLIS—509-510 Occidental Bldg.
WASHINGTON, D. C.—534 Southern Bldg.
ST. LOUIS—1212 Chemical Bldg.
DALLAS—Southwestern Life Bldg.
SALT LAKE CITY—Scott Bldg.
PITTSBURGH—945 Oliver Bldg.
DETROIT—1925 Ford Bldg.
TOLEDO—629 Nicholas Bldg.
CLEVELAND—706 Rose Bldg.

CANADIAN REPRESENTATIVES—The Dominion Radiator Co., Ltd.

Toronto, Ont., Montreal, Que., Winnipeg, Man., Hamilton, Ont., St. John, N. B., Calgary, Alta., Vancouver, B. C.

Merry Christmas, Boys

And it is a Merry Christmas for you Plumbers who have reaped the harvest of profits from Vogel installations and a Merry Christmas for those home-owners whom you have freed from the troubles due to frozen closets in unheated places.

The Vogel Frost-Proof, No. 1 illustrated, is the closet referred to. Zero temperatures never affect it and it possesses other virtues to be investigated.

Your jobber will supply you.

Jovo—

JOS. A. VOGEL CO.

WILMINGTON, DEL. **ST. LOUIS, MO.**

MEMBERS THE NATIONAL TRADE EXTENSION BUREAU OF THE PLUMBING AND HEATING INDUSTRY. PERMIT Nº 39 REGISTERED

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American Thermostat Co. 83
Armstrong Mfg. Co. 79

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Beaton & Cadwell Mfg. Co. 91
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Kewanee Boiler Co. Inside Front Cover

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Chicago, December 25, 1920

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Member of the Associated Business Papers.

Leading Articles in This Issue:

"Take a Bath Every Day" Campaign.

Be Square with the Customer and Never Do a Poor Job.

Technical School Training for the Heating Profession.

More and Better Sanitary Laws, Ordinances, Rules and Supervision Essential Today.

A Pound of Steam.

Time Required to Install Gas Appliances and Piping.

Special Departments

Questions and Answers.

Among the Wholesalers and Manufacturers.

The Metal Market and Trade Reports.

Among the Plumbing and Heating Contractors.

Legal Decisions.

Plumbing and Heating Patents.

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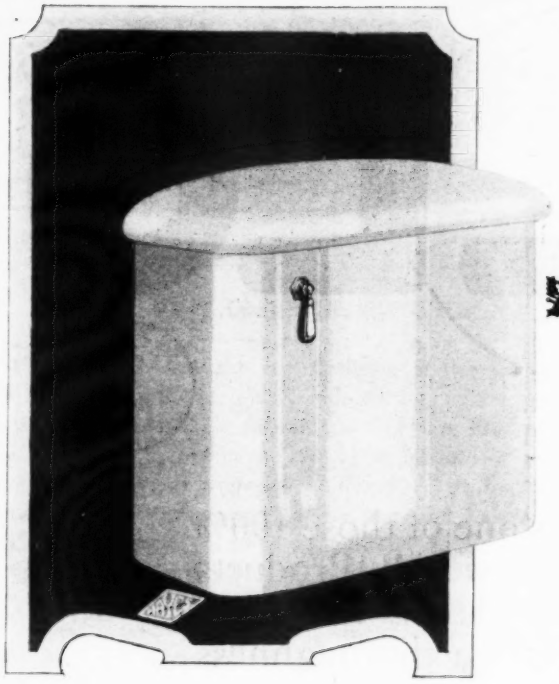


Yuletide Greetings

We wish each and all continuous and augmented prosperity during 1921.

Plumbers, jobbers, architects concede that the "Hayes" tank is as handsome as has ever been produced.

The rich, permanent white finish adds "class" to the finest bath room.

We request every plumber to get prices from his jobber. You will be agreeably surprised.

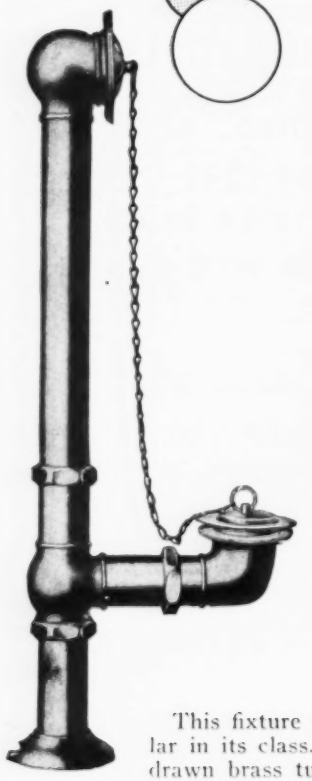
"Hayes" tanks are made of genuine **Ruppelite.** Write us for descriptive circular.

HAYES-RUPPEL MANUFACTURING CO.

OTTAWA AND LOUIS STREETS

GRAND RAPIDS MICHIGAN

BALLO



BALLO is one of those 100% value "Wiseco" Products that old Father Time has tested with a thoroughness that would cause many another connected waste and overflow to be consigned to the scrap heap.

IT IS THE BETTER MATERIAL and better workmanship that makes "Wiseco" Products stand up under every service test.

USE "WISECO" and be certain.

This fixture is one of the most popular in its class. It is made of seamless drawn brass tubing of extra high quality. Its finish is second to none, its adaptability to many requirements for which it was designed is one of the factors which have increased its usage a hundred fold.

The master plumber without the "WISECO" Catalog is without a complete reference of the most highly developed line of Plumbers' Brass Goods ever made by one manufacturer. And, the "WISECO" Catalog is so indexed as to make it easy to order.

J. B. Wise, Incorporated
WATERTOWN N Y

No question is more vital to America today than that of immigration. Tens of thousands of men, women and children are pouring into our ports and millions are clamoring for admittance. It is a problem demanding the wisest counsel of the brains of America. A nation has the right to say who shall enter, in order to protect its interests. Certainly America should protect itself in these days of critical situations. Bolshevists and other undesirables should be barred now and for all time.

—The Owl.

EDITORIAL

DOMESTIC ENGINEERING

Whole No. 1463 CHICAGO, DECEMBER 25, 1920 Vol. 93, No. 13

A SIDELIGHT ON HOME OWNING.

SPEAKING before the recent sitting of the U. S. Senate Committee on Reconstruction and Production in Chicago, a prominent Chicago banker said that never before in the history of his and other banks were savings deposits so heavy. His bank, though only fifteen years old, he went on to say, had the large total of seventy millions of savings. In other words, the wave of extravagance having passed, with Liberty Bonds selling below par, building loans unavailable, and construction costs sky-high, Mr. Average Citizen is content to put his surplus where he thinks it will be safe, at 3 per cent interest.

Here is one little sidelight on the building situation. An editor visited a real estate man last Sunday, near a new subdivision. The realtor pointed out a section having 200 lots, all of which were sold, and on which there were only 20 homes. Said the real estate man: "Here you see 90 per cent of the lots vacant, the owners of which are biding their time before building. For two years or more the people have been reading about the high cost of building and the newspapers have called construction interests profiteers. The average man's reading is confined to newspapers, and most of the time he believes what he reads. Building, therefore, is stagnant, and we can readily appreciate why a man doesn't want to put up an $8,000 home that will be worth say only $5,000 in a few years. Remember, owning his home is the greatest event in the average man's life, and when he builds or buys he has to make sacrifices. Right now he is making sacrifices by living wherever he can, putting up with innumerable inconveniences, until the situation is normal."

Here are 180 vacant lots that will be improved when the people decide they should be improved, and not before. This one little section—an infinitesimal spot in these United States—will eventually utilize 180 bathtubs, 180 closets, 180 lavatories, 180 kitchen sinks, 180 heating plants, miles of soil, waste and water pipe, thousands of fittings and so on. Multiply this by the thousands and tens of thousands, and you get a pretty good idea of what a resumption of building means to the plumbing and heating industry.

Theory does not interest the man who is building a home. Cold facts, in dollars and cents, are the predominating factors when he does the biggest thing in his life. Unrest will automatically lessen as we build more homes. The much needed building of homes should not be delayed.

TAXING THE BATHTUB.

THERE is a bill before the parliament of Holland to tax bathtubs, and it is expected to pass. The tub is regarded by the Dutch statesmen as a luxury, and as such they propose to tax it. But there are other reasons for believing that the time has come when the bathtub should be regarded not as a luxury but as a necessity in Europe. Holland has always had the reputation of being a clean country, but none of the countries of Europe are as clean today as they were before the war. For this reason, if for no other, instead of taxing bathtubs, it would not be a bad idea if the parliaments of the different European countries enacted laws compelling the installation of a bathtub in every residential structure.

The above statement recently appeared as an editorial in the Chicago "Journal," and we would like to say that if a bathtub is good for every European home, why shouldn't the same doctrine apply to the American home? Since the November 27th issue, "Domestic Engineering" has endeavored to prove conclusively, in its "Take a Bath Every Day" campaign, that if people will consider bathing as a health habit, rather than wholly as a cleansing habit, the nation will be more vigorous and disease materially lessened. The only way to sell the people the bathing for health habit is through nation-wide publicity, and that means the manufacturer, jobber and plumbing and heating contractor and the various national, state and local associations, should all cooperate in a campaign of education and carry it convincingly to the public, and, above all, keep up the good work.

The leading article in this issue is the third of the "Take a Bath Every Day" campaign series and offers constructive suggestions how the component parts of the plumbing and heating field can work towards the desired end. If you have already done something along these or other lines, we would greatly appreciate your writing us, giving full details. Cooperation advances trade interests.

"Take *a* Bath Every Day" Campaign

What the Manufacturer, Jobber and Plumbing and Heating Contractor Can Do to Popularize Daily Bathing and Build Business

HATS off to the Colorado Springs Master Plumbers' Association! Read the letter reproduced on the following page and learn what the live wires out in Colorado are doing to sell the bathing-for-health habit to the public. This campaign in Colorado Springs will be widespread in its benefits because it is a famous health resort and is visited annually by tens of thousands of people from all parts of the country. F. E. Bumstead, a progressive plumbing and heating contractor, has been appointed advertising manager of the campaign, and the association has contracted for space in local newspapers, to run for several months.

"Domestic Engineering" congratulates the Colorado Springs Association also for its progressiveness along other lines. From a close, ill-ventilated back room, the association has moved to the large auditorium of the Chamber of Commerce. Every member of the association is a member of the Chamber, and application has been made for a division to be known as the Plumbers' Division of the Chamber of Commerce. If passed, the contractors will have recognition and representation on the various committees. As Mr. Bumstead writes, this is a big step towards the proper recognition of the craft. The association meetings take up the question of public health, and further those ideas through the city Health Department, as well as general trade topics. Already, publicity in connection with the "Take a Bath Every Day" campaign has appeared in the Chamber of Commerce publication, and it brought many inquiries, principally from the medical profession.

Colorado Springs plumbing and heating contractors are certainly on the job and going ahead in fine style!

What Colorado Springs is doing can be accomplished by other local associations throughout the country. Here is the way Mr. Local Secretary can get started:

What the Local Association Can Do.

Write every member that the next meeting will be devoted to discussing the "Take a Bath Every Day" campaign that has been running in "Domestic Engineering." Urge every member to read the November 27th and December 11th issues of "Domestic Engineering," including the editorial in the former number entitled "What the 'Take a Bath Every Day' Campaign Means to the Plumbing and Heating Industry." If every member will read beforehand what is going on, he will come to the meeting well prepared to discuss the campaign and its health as well as business-building possibilities.

In the meeting discuss what the Colorado Springs Association has done and consider the advisability of following this excellent example. Take up the question of cost and what every member would have to contribute. If manufacturing or jobbing houses are located in your city, invite them into your meeting and ask them to participate financially and otherwise in the campaign.

Urge every member, manufacturer and jobber to sell the bathing-for-health habit in their newspaper, magazine and other advertising.

Take a vote of endorsement regarding the campaign. Then the following day go in a delegation, or appoint a committee, to call on your local newspaper editors. Have your president or secretary or chairman of the committee point out what bathing for health means to the people of your city. If this does not get the desired results, we will be very much surprised, because live newspaper men are always looking for real ideas that will arouse public interest. Furthermore, it will add prestige to your association.

Take up the "Take a Bath Every Day" campaign with your local health department. Give the head of the department the facts about bathing, as outlined in "Domestic Engineering." Endeavor to get his endorsement of the campaign and get it into the newspapers.

Place the matter before your Chamber of Commerce. Get mention of the campaign in the chamber's weekly publica-

Daily Bathing Insures Good Health
Use Cut of
Modern
Bathroom
Prominent medical men and heads of health departments throughout the country say that the people who take a bath every day are best fitted to withstand colds, will feel better, eat better and probably live longer. Like the apple, a bath a day keeps the doctor away. Daily bathing is the cheapest, easiest and surest way to keep good health.
See us for modern plumbing and heating equipment.
Besttown Plumbing & Heating Co., 457 Main St., Besttown, Phone 668-M

Suggestion for Blotter to Boost Daily Bathing.

tion. Arrange to have one of your members speak on the subject at the next meeting of the chamber.

This campaign can be put over in a big way, with splendid results, if every member of the association will work together. The campaign has endless possibilities. It will interest the public and also elevate the industry.

HOW COLORADO SPRINGS, COLO., MASTER PLUMBERS ARE TAKING UP THE "TAKE A BATH EVERY DAY" CAMPAIGN.

A Letter from F. E. Bumstead of Colorado Springs.

Inasmuch as your "Take a Bath Every Day" has been of great interest to the plumbers of Colorado Springs, I thought it might interest you to know just what we are doing here. I have been appointed advertising man for the Association and have contracted for space covering several months for a "Take a Bath Every Day" campaign in our local papers.

First, let me say, we have moved from a close, ill ventilated back room, to the large auditorium of our Chamber of Commerce. Every one of our members are members of the Chamber. We have applied for the recognition of a division of the Chamber to be known as the Plumbers' Division of the Chamber of Commerce. This, if allowed, will give us recognition and representation on the various committees.

A big step toward the recognition of our craft as respectable merchants. Our meetings take up the question of our Public Health and further those ideas through our Health department, as well as the general trade topics. Any one is welcome.

In the first publication I secured an editorial which I thought was very good; second publication was the heading and the first four lines of your publication of Nov. 27th, in very neat form but without any clue as to who was doing it. This brought out many inquiries, principally from the Medical profession; the next article was that taken from Dr. William M. Sadler, in "The Science of Living."

It is our intention to keep up this publication as we believe it is a long stride toward our advancement, and we heartily thank the "Domestic Engineering" staff for bringing this matter up so ably.

I am going to try out a change in the heading adding "For Your Health's Sake Take a Bath Every Day." What would be your criticism of this change?

There is no place in the world where there is a finer bunch of men in the craft than in Colorado Springs. We would be pleased to have one of your representatives give us a lecture any time they might be going through. Remember! Colorado Springs is an all season Year Round resort and the soda baths at Manitou, in our new $300,000 bath house are getting health results that were hardly dreamed of by the most visionary, our climate, summer and winter, no longer has to be mentioned as it is generally recognized as the best God has given to any earthly people.

Take a Bath Every Day.
With our Modern Sanitary Bath Tubs or improved Showers, and the
Heaters for Hot Water
Bathing becomes an Extreme Pleasure, no matter how cold the weather.
Mitham AND Hewitt
Service is Us!
CLAYTON, GOLDSBORO.

A Two-Column Ad. Which Recently Appeared in The Clayton "News," Clayton, N. C.

What the Manufacturer and Jobber Can Do.

Manufacturers and jobbers, with their well-rounded organizations, advertising departments, alert salesmen, etc., can further the "Take a Bath Every Day" propaganda in such a way as to make the movement nation wide in a comparatively short time. With annual meetings to be held shortly, the "Take a Bath Every Day" campaign can be made part of the program and its possibilities can be outlined by the chairman of the meeting.

Call attention to what manufacturers and jobbers throughout the country think of the campaign, as shown in the lead-

The Secret of Cleopatra's Beauty
—she took a Bath Every Day!
Cleopatra, maid of the Nile,
Had all the other girls beaten a mile;
When others would cry, little Cleo would laugh,
Because she got beauty through her daily bath.
SEE US FOR MODERN PLUMBING AND HEATING APPLIANCES
Besttown Plumbing and Heating Co.
PHONE 668-M

Suggestion for Movie Slide for Use In Connection with "Take A Bath Every Day" Campaign.

ing article in our December 11th issue. Discuss the subject thoroughly and ways of making the campaign a success.

Give consideration to the furtherance of the campaign through national advertising, weekly or monthly bulletins and all trade literature issued by the company, co-operation of branch managers and salesmen. Urge salesmen to make bathing-for-health a topic of conversation with plumbing and heating contractors and have them recommend methods for popularizing the campaign, as suggested in the foregoing for a local association advertising campaign.

Besttown Plumbing & Heating Co.
445 Main Street
January 1st, 1921.

Mr. Customer,
Anywhere.
Dear Sir:

What would you think if the legislature passed a law prohibiting bathing from November 1st to March 15th? Would a tax of $30 on bathtubs meet with your approval? These may appeal to you as absurd questions, but the fact is about fifty years ago these questions aroused considerable controversy. In Philadelphia, in 1843, the ordinance to stop bathing was lost by only two votes, and in the same year the state of Virginia imposed the $30 tax on bathtubs.

There has been a great—and sensible—change of sentiment regarding bathing since those days. Now we find eminent medical men and heads of health departments endorsing a bath every day. They state that the skin has important functions in eliminating waste matter from the system, and if the pores are not open, it cannot properly perform them.

A bath a day is recommended as a preventive of disease. Properly taken, the daily bath makes the skin more rugged, making people less susceptible to colds. The daily bath is a stimulant mentally and physically, and we enclose an article on the benefits of bathing which we are sure will interest you.

Everyone wants good health, and daily bathing is one of the cheapest and most reliable means of having it.

Yours for a healthier city in 1921,
Besttown Plumbing & Heating Co.

Interest the Customer by Circular Letter in Daily Bathing.

If salesmen can be enthused regarding the "Take a Bath Every Day" campaign, and their enthusiasm maintained through "Domestic Engineering," company bulletins, national advertising, etc., results will be accomplished in a very short time.

$25 for a Slogan.

"Domestic Engineering" is offering the sum of $25 (see full-page announcement in this issue) for the best slogan to be used in connection with the "Take a Bath Every Day" campaign. If the winning slogan is sent in by more than one person, each one will get the full amount of the prize. The contest is open to everyone in the plumbing and heating field, outside of employes of "Domestic Engineering."

Accompanying this article are suggestions for newspaper advertising, circular letter, movie slide and blotter, and future articles will suggest further ways of making the campaign a success.

If you are helping to make the "Take a Bath Every Day" campaign a success, write "Domestic Engineering," giving details of what you are accomplishing. It will be appreciated.

Get everyone in your organization interested not only in the "Take a Bath Every Day" campaign, but also in the slogan contest. Everyone is eligible. Tear out the page announcement in this issue and post it in your shop or office. Get the journeyman, the bookkeeper, the foreman, the stockman, the stenographer and everybody else interested in getting the winning slogan. There's $25 for the winner.

"Domestic Engineering" is doing its utmost to get widespread publicity on the "Take a Bath Every Day" campaign. Thousands of reprints are being made of the articles that have already appeared. For example, in our last issue the heads of various health departments throughout the country were quoted as favoring daily bathing. Reprints were sent to all of the newspapers in each city quoted, and each editor's attention was called to what the local health man had said about daily bathing. Reprints of the first "Take a Bath Every Day" article were also enclosed.

The Daily Bath Is the Ounce of Prevention

"Prevention is better than cure," we are told. Certainly it is cheaper to keep well, and one of the cheapest and most reliable ways is through daily bathing.

"A daily bath will do more to keep you in perfect health and vigor than almost any other one thing," is what a well known physician, Dr. Woods Hutchinson, tells us. And he is not alone in that contention. Scores of prominent physicians and heads of health departments throughout the country testify to the same statement and even go further than that.

The daily bath is one of the surest ways of preventing colds. Furthermore, it enables the skin to perform its proper functions in eliminating waste matter from the body. "A healthy skin is the best undergarment ever invented." Teach your children the daily bathing habit.

Look upon your bathroom as a place for health as well as convenience.

THE BESTTOWN MASTER PLUMBERS' ASSOCIATION

(Published for the purpose of making the people of Besttown healthier, happier and more vigorous citizens.)

How the Association Can Speak to the Public About Bathing and Add Prestige to the Craft.

Reprints are also being sent to every state health journal throughout the country. These journals have exceptionally good circulation and it is hoped that the editors will see fit to publish what we are sending them.

Building plans stimulated by 30-cent cut in cement price. Lowering price of soft coal has had influence on production cost, while reduction in brick and oak flooring and the cheaper grades of flooring are expected to decrease further the cost of building.

F. W. Dodge Co.'s Construction Reports show that building contracts awarded in that company's territory—states east of the Missouri and north of the Ohio Rivers—during week ending December 10th, amounted to $23,282,400. This compares with $28,943,700 for the week ending December 3rd.

Standards for Computing Radiation and Boiler Sizes

Compiled by the Standardization Committee of the Chicago Master Steam Fitters' Association.

Rules for Computing Radiator Quantities for Heating Plants.

Schedule for computing minimum quantities of steam radiation at 70 deg. Fahr. with outside temperature at minus 10 deg. Fahr.

1 ft. of radiation for every 300 cu. ft. of contents, plus

1 ft. of radiation for every 15 sq. ft. net exposed wall surface, plus

1 ft. of radiation for every 2 sq. ft. of single glass surface, plus

1 sq. ft. of radiation for every 4 sq. ft. of double skylight.

For all rooms with plastered ceilings and unheated air space between ceiling and the roof, add 1 sq. ft. of radiation to every 30 sq. ft. of ceiling area.

For all rooms with ceiling plastered on roof joist add 1 sq. ft. of radiation to every 20 sq. ft. of ceiling area.

All bath rooms in living abodes to be heated to 80 deg.

For all rooms with ceiling of open joist or concrete roof construction add 1 sq. ft. of radiation to each 10 sq. ft. of roof.

For all rooms with northeast or northwest exposures add 10 per cent additional radiation.

Where radiators are placed under seats or behind grills add 20 per cent additional radiation.

Where radiators are placed in open recesses add 10 per cent additional radiation.

For indirect radiation without fan system add 50 per cent additional radiation.

For direct-indirect without fan system add 25 per cent additional radiation.

Where single pipe coils or single cast-iron wall radiation is placed on side walls 80 per cent. of the required amount of standard column radiation may be installed. Size of boiler and piping, however, shall be based on standard column radiation requirements. Ceiling coils to be considered as standard column radiation.

In measuring glass surface the full opening in wall shall be figured. Outside door openings shall be taken as glass.

For computing minimum quantities of hot water radiation at 70 deg. Fahr. with outside temperature at minus 10 deg. Fahr. add 60 per cent to amount necessary for steam.

For computing minimum quantities for vapor systems at 70 deg. Fahr. with outside temperature at minus 10 deg. Fahr., add 20 per cent to amount necessary for steam.

A vapor system is defined as a two-pipe steam system which has the return lines open to atmosphere with no valve at the return connections of heating units to close against steam.

For heating to temperatures other than minus 10 deg. Fahr. to 70 deg. Fahr. multiply actual amount of radiation required by the following co-efficients:

—10 deg. to 80 deg.	1.13
—10 deg. to 75 deg.	1.06
—10 deg. to 70 deg.	1.
—10 deg. to 65 deg.	.94
—10 deg. to 60 deg.	.87
—10 deg. to 55 deg.	.81
—10 deg. to 50 deg.	.75
—10 deg. to 45 deg.	.69
—10 deg. to 40 deg.	.62

Rule for Computing Boiler Sizes for Direct Radiation.

Schedule for computing minimum sizes of boilers for the average building based on approved ratings specified in the manufacturer's catalogue.

First reduce all radiation to the equivalent of cast iron column radiation, then add the following factors of safety when buildings are heated from —10 deg. to 70 deg.:

Cast iron up-draft boilers	add 80 per cent
Cast iron down-draft boilers	add 60 per cent
Steel firebox up-draft boilers	add 35 per cent
Steel firebox with approved arch	add 45 per cent
Steel firebox down-draft boilers	add 45 per cent
Cast iron magazine approved type	add 60 per cent

Steel firebox up-draft boilers with approved furnace to be figured on same basis as steel down-draft of similar number.

Steel tubular or steel water tube boilers 100 sq. ft. per horse power (A. S. M. E. code).

In computing boiler sizes for buildings heated to lower than —10 deg. to 70 deg. Fahr. multiply the amount of cast iron column radiation necessary to maintain the required temperature by the following co-efficient before adding the percentage given in rule for computing boiler sizes:

	Steam	Water
—10 deg. to 65 deg.	1.03	1.05
—10 deg. to 60 deg.	1.07	1.09
—10 deg. to 55 deg.	1.10	1.13
—10 deg. to 50 deg.	1.13	1.18
—10 deg. to 45 deg.	1.17	1.24
—10 deg. to 40 deg.	1.20	1.27

Rule for Computing Boiler Sizes for Direct-Indirect and Indirect Radiation.

For computing boiler size for direct-indirect and indirect radiation, reduce same to basis by adding 25 per cent to direct-indirect and 50 per cent to indirect, then use factor of safety as called for on direct radiation.

Rule for Computing Boiler Sizes for Hot Blast Coils.

For computing boiler size to be used for Hot Blast Coils use manufacturers' condensation charts and figure ¼ pound of condensation per hour as equivalent to 1 sq. ft. of direct radiation and add following factor of safety:

Firebox, up-draft	10 per cent
Firebox, down-draft	15 per cent
Portable	15 per cent
Cast iron, down-draft	25 per cent
Magazine	25 per cent
Cast iron, up-draft	40 per cent

Where coils are to be inserted in boiler, or steam coils in hot water tank for heating water for domestic purposes, size of boiler should be increased, figuring each gallon of water-tank capacity as equivalent to 2 sq. ft. of radiation. For example, a 160-gal. tank should be figured as equivalent to 320 sq. ft. of radiation. If this is connected to an up-draft cast-iron boiler, the increased size of the boiler would be 320 plus 80 per cent, or 576 ft. If connected to a firebox up-draft boiler, increased size of boiler should be 320 plus 35 per cent, or 432 ft.

The above schedules of quantities are commensurate with good heating results for the average building of average construction, but by no means to be construed as guarantees of the proper quantities of radiation or boiler sizes necessary to heat every building, as extraordinary conditions will of course require additional radiation or boiler capacity.

It is recommended that in all installations of steam boilers that drain valves be placed on the returns and that the condensation from such returns be discharged into the sewer for a period of from three days to one week after starting fire, thereby clearing system of grease and dirt. At the end of this period, boiler should be thoroughly washed and blown out.

The Department of Labor states that wholesale prices of commodities have declined 24 per cent since last May.

BE SQUARE *with the* CUSTOMER *and* NEVER DO *a* POOR JOB

This is the Policy Followed by a Successful Plumbing and Heating Contractor in Pennsylvania

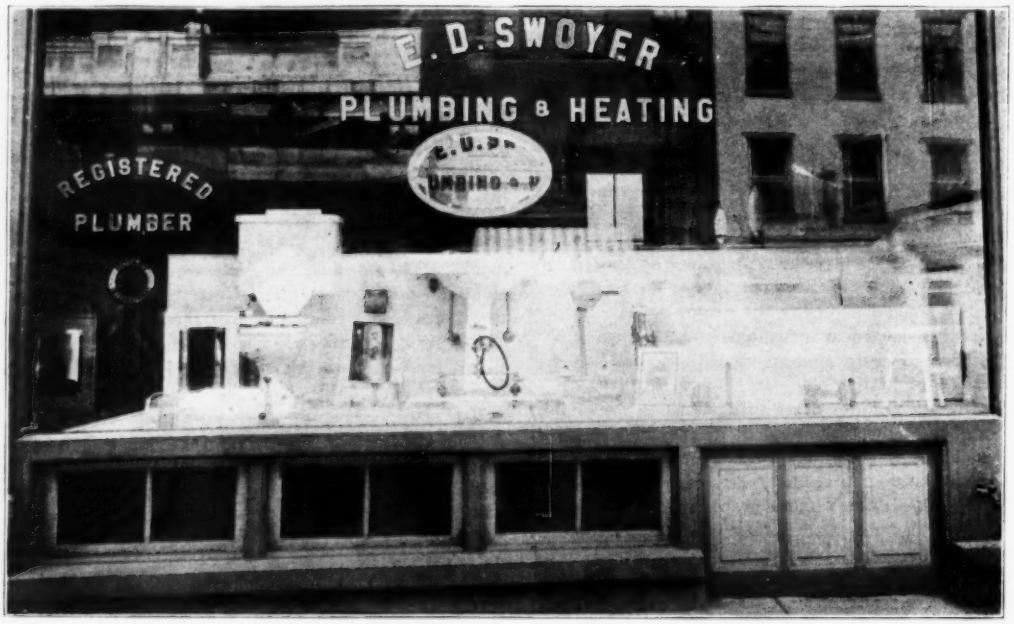
By "The Research Man"

Members of the Firm of E. D. Swoyer, Allentown, Pa.—Left to Right, E. D. Swoyer, D. P. W. Swoyer, S. E. Swoyer and Miss Pearlman.

"WHAT is the best way to build up a substantial plumbing and heating business?" the writer asked E. D. Swoyer, of Allentown, Pa., one of the most successful plumbing and heating contractors of that city.

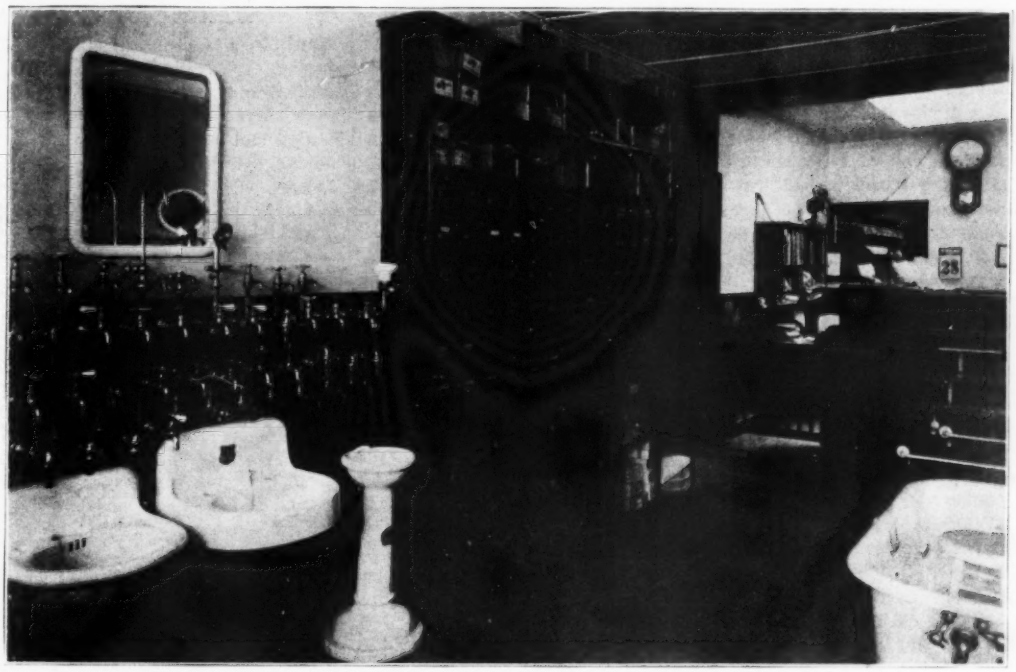
"Be square with the people," answered Mr. Swoyer. "I don't mean to just talk about being square and then slip something over whenever there is a chance. They will usually find out about it in time anyway. Being square doesn't only mean being honest about bills etc., but it means being honest about everything. Quite often a person wants something done in a certain way when the plumber knows that it should not be done that way, and if the plumber does not insist on doing it the right way, he is not square with his customer.

"Being square with the customer means also giving him a full day's work for a full day's pay. Some say they can't do that, because men won't do a full day's work any more. That all depends on the man that is running the shop. There are plenty of men who will do an honest day's work, and that is the kind of men to keep. Of course, it takes time to build up an organization of men who are always willing to do what is right, but then it also takes time to do anything else that is worth while. Most of my men have been with me for many years, and I will not keep a man who will not give me a full day's work for a full day's pay. I do not hire many floaters, for my business is pretty steady and I try to keep the same crew all the time. In this way I know my men and the men know what I want. A while ago I had some men working on a pretty big job where they were held up for a while one day because something wasn't ready. The men complained to the manager of the place who told them that he couldn't see why they were worrying about it as long as they were getting their pay. They told him that they had to account to the boss for every hour spent and that, if they couldn't work, they would have to go to some other job. The manager told them that they were a queer class of plumbers; that most plumbers he had ever had would loaf every chance they got and needed



One of the Up-to-Date Window Displays Arranged by E. D. Swoyer, Allentown, Pa.

considerable watching in order to get something out of them at all. I will not have any loafing on the job or even around the shop, for it hurts both me and the plumbers themselves, as well as the customers. By putting in a full day and doing first class work, I get plenty of work, and the men are kept busy the whole year and don't have a lot of lost time. During the last few years there has been more work than there were plumbers to do it, but this will not always be the case, and when things get a little quiet, the man who will keep right on doing business, is the man who treats the people square at all times, rush or no rush.



An Interior View of the Plumbing and Heating Establishment of E. D. Swoyer, Allentown, Pa., Showing at the Left a Rack of Spigots Which Has Helped Materially in Increasing Sales, Disposing of Obsolete Types and Enabling the Customer to Select Just What He Wants.

"What's right is right, and it is better not to do a thing at all than to do it wrong. I have had some awful arguments at times because I wouldn't do things the way people wanted them. During the war we had a big camp here where I did a good deal of the plumbing. The way the work was to be done in the officers' quarters according to the specifications was very unsanitary. I protested to the captain in charge of the work and then to the colonel in charge of the camp, but they told me that I would have to do the work according to the blue prints. I kept after it, however, until a general and some majors and captains came from Washington to investigate. They wanted to know what all the fuss was about and I told them and showed them just why the arrangements specified were a menace to the health of the officers. They admitted that I was right and ordered me to change the whole thing and put it in the way it ought to be. The colonel told them that I was stubborn and refused to give in, but I told them that I did not have any right to give in when I knew that I was ordered to do the work wrong and that it would be dangerous for the officers who would have to live in the place. The investigating officers congratulated me on being consistent and insisting on doing the work right. I have had many arguments like that. People may not like it at first, but they eventually respect me for it, and come back when they need anything in the plumbing and heating line. It has been the means of building up this business, for I do not advertise, nor do I go out after jobs. I let them come to me. Some time ago a new theatre was built in this town and a number of contractors in plumbing and heating put in bids and tried to land the job. I didn't go near the place nor make any effort to get the work, but one day the builder came to me and said, 'Mr. Swoyer, I want you to do the plumbing and heating in the new theatre.' I did not know the man and told him that I would not bid. He simply said that he wanted the work done right, and was willing to let me have a fair profit and hand in a bill for whatever I felt was right.

"The man who wants to build up a plumbing and heating business in a town like this must also be willing to go out of his way at times to help out his customers. The little things, if they are handled right, often lead to bigger things later. Not so long ago I was awakened by the ringing of the telephone and was told that a pipe had burst over in a certain building and that the water was doing a great deal of damage. There was an awful rainstorm at the time, but I dressed and went over. It was a nasty trip and I might have put in quite a bill, but I didn't. Not long after that the same party gave me a good-sized plumbing and heating job without asking for a price. This is, of course, an extreme case, but there are a great many little things that may be done without great cost to the plumbing and heating contractor which will bring him good returns at some other time."

If there is anything that is more noticeable than anything else about Mr. Swoyer's establishment, it is orderliness. From the second floor down through the basement and out in the back yard there is a definite arrangement of everything. Nor is rubbish or dirt allowed to accumulate anywhere. Wherever one may wish to look about this place of business, he will find it clean and orderly. The show window is very attractive and has a well balanced display of the best of fixtures, and as one enters the showroom, he will notice to the left an arrangement of spigots that is rather unusual. The spigots are arranged in rows along the wall fastened together with short nipples. Every kind of spigot may be found in this assortment.

This arrangement eliminates the necessity of getting out a lot of boxes, etc., when a customer comes in for something in this line. They are all right before him to choose from. The reason, however, for making this display of spigots in the first place was to get rid of various types which were moving very slowly and which had been in stock for a long time. Mr. Swoyer wished to cut down the variety of types to a few of the latest and best. The scheme has proved very successful and only a few of the obsolete types remain. The idea of cutting down the variety is carried out in other things as well. For instance, Mr. Swoyer carries only one type of range boilers, although he has several grades made by the same concern. In this way he is better able to hold the manufacturer responsible for defective goods and also receives more attention from the manufacturer than if he dealt with a number of concerns.

Stanley, one of Mr. Swoyer's sons, has charge of the office and follows out the same idea of systematic and efficient orderliness that is displayed in the rest of the business. The bookkeeping system, which was developed by Stanley Swoyer, is simple, practical, and so arranged that any information concerning the business may be had at a moment's notice. Convenient files readily yield data on past business.

The second floor is used for a storeroom for brass, lead, and other small kinds of material; and not only are the brass and lead goods arranged in an orderly manner, but also all the various other things that are so often more or less thrown together in corners and boxes without any definite arrangement. Any man may come here and place his hand on the thing he wants without wasting a lot of time hunting for it.

Back on the first floor again and just back of the office is the workshop, where one is again impressed with the neatness of the place and the almost total absence of the usual pile of short pieces of pipe with blind ends. Mr. Swoyer insists on having the men use up the short pieces rather than cut pieces off full lengths, and as stated before, no idling is tolerated. When a man has a half hour or so in the shop, he must either cut nipples, thread blind ends, or clean up around the shop. D. P. W. Swoyer, another son, has charge of this part of the work and does not permit disorder or the accumulation of waste and dirt. This applies as well to the basement where the heavier materials are stored, and also to the back yard. Here anything that is fit for nothing but scrap is placed in a pile by itself and sold as junk when enough has accumulated to make a load. But here is little that is permitted to become junk. Everything that can be used is used before it becomes scrap through permitting it to lie around to rust, become battered about, or obsolete.

The net result of this orderliness and constant checking is the elimination of waste. "Some years ago," said Mr. Swoyer, "I saw seven big loads of stuff being carted away from a certain shop by a junkman. The shop had just cleaned house and was selling as junk a great deal of valuable material that had become scrap simply because it had not been used when it might have been used. Had it been arranged in an orderly manner so that the man could see what he had, it might have been used before it became rusty, broken, or otherwise unfit for use. I made up my mind that that was mighty expensive business and that it should never happen in my shop, and this is one of the reasons that I usually show a pretty comfortable net profit at the end of the year."

Mr. Swoyer is never too busy to take an active part in the work of the association. He has been president of the Allentown association for many years and still is, and is an energetic and conscientious worker for the betterment of the trade as a whole. His son, Stanley, also is a progressive and enthusiastic worker for the improvement of the plumbing and heating trade and has given some very forceful and valuable talks to the association on overhead costs.

Nor does Mr. Swoyer confine himself to the association, for he takes a very prominent part in the activities of the Rotary club, and a short time ago read a paper before that organization entitled, "The Plumber and his Relation to Humanity." This paper was given for the purpose of presenting the plumbers' problems to the public and to correct some very mistaken impressions that many people have had about the plumbing and heating business in general.

PROFIT SHARING AMONG THE PLUMBING AND HEATING FRATERNITY.

By Edward Kanney, President, Indiana Society of Sanitary Engineers.

Today we hear much from large manufacturing industries in regard to profit-sharing. We read, occasionally, where certain concerns have organized and successfully carried out, through profit-sharing, a very successful business. I have given this matter considerable time and investigation, and I find, in checking over the plumbing and heating concerns in the United States, who are actually engaged in contracting and construction work, there would possibly be 420 concerns who have such organizations, that there would be a possible chance of profit-sharing.

The great majority of the so-called plumbing and heating shops, or men doing a contracting business, have very little profit at the end of the year.

Therefore, the profit-sharing plan does not appeal to me. I know of a number of firms that pay a certain bonus—if you will call that profit sharing—at the end of the year. Some of these plans are successful and others are not, for the reason that at times there is a slump in business and there is very little profit left, so that the men under you are not satisfied. It is all right as long as the "boss stands the loss, and we have no losses." That is what is thought and it is a very great detriment to the profit-sharing scheme. If the men could be made to understand that they will take losses with the profits, or on equal bases, then I believe profit-sharing would be all right.

Reports show, through Bradstreet and Dun ratings, that about 80 percent of the plumbing shops make less than 5 per cent profit on their business during the year. Ninety per cent of businesses fail after the fifth year of business, which is deplorable.

At the present time, there is a great constructive force in operation, namely the National Trade Extension Bureau, which is trying, through its fieldmen, and educational matter, to bring before plumbing and heating contractors an education which, if the average man will grasp it, will be of untold value to them, both financially and otherwise.

In a voluntary effort to help the company in its readjustment policy, workmen in the Erie shops at Susquehanna have organized a movement to take a week off December 24 to January 2, a few men will remain for emergency service.

A cablegram from London, dated Dec. 16th, states that British labor circles declare the number of men out of employment is fully 1,000,000. The total number of persons suffering from present conditions is placed at from 3,000,000 to 4,000,000, a large proportion being former soldiers.

For the first time since early last year there has been reported an actual surplus of freight cars in the United States. Figures made public by the car service division of the American Railroad Association indicate that in the week ended November 30th last there was a net surplus of 30,022 freight cars throughout the country. It is believed that the decline in the volume of traffic moving is responsible for the improvement in the car situation, although the policy of the railroad officials in heavier loading of cars is believed to have aided matters.

TECHNICAL SCHOOL TRAINING *for the* HEATING PROFESSION

Paper Read Before the Last Annual Convention of the National District Heating Association, by Professor J. D. Hoffman, Purdue University, Lafayette, Ind.

Prof. J. D. Hoffman

I WOULD like to call your attention to some facts and a few figures concerning technical education and its direct contact with that part of the commercial and manufacturing field which is of vital interest to the heating engineer. My subject is one in part only of my own choosing. Having been intimately associated with technical school work for so many years it never occurred to me that there were those who were not thoroughly conversant with the work and would welcome a few words on the subject.

Technical schools have had but a brief existence, about fifty years, but in that time they have had a marvelous growth and have come to be a supremely important factor in the field of engineering sciences. Senator Morrill, who in the year 1862 introduced a bill in Congress to endow government schools whose duties, among other things, "shall be to teach Agriculture and the Mechanic Arts," probably builded better than he knew. His idea at that time of the field such a school should fill was probably more along the lines of the trades and the vocational than exists at the present time, but the evolution from the purely practical into the highly theoretical was so swift and so spontaneous as to be almost startling. The industrial and commercial world was waiting for just this transition and Mr. Morrill was the first to catch the inspiration and to act upon it.

Origin and Existence.

Beginning with the Michigan Agricultural College, the first to take up the benefits of the Morrill Act, the year the bill was passed, these schools have increased in numbers until within a period of a little more than half a century there is a well established technical school in nearly every state and territory in the Union, with a few states supporting two. Beginning also with the emphasis upon hand craft as specifically mentioned in the bill, the courses have enlarged in scope until they now include all the fundamental theoretical courses common to all the various lines of engineering and a multitude of specializations that aim to develop men in an intensive way for almost any given line of work.

The establishment of these schools mark an epoch in the science of engineering in this country. Previous to this time the design of any piece of machinery or structure was largely a matter of chance. Skilled workmen were trained under the old apprenticeship system through years of service to construct and in a limited sense to theoretically design a product, but the engineering of the job from the standpoint of the application of well understood physical laws as we now understand them was absent. It is my opinion that the technical school should receive the major share of credit for this sudden development. If any proof of this statement is necessary we have but to review the events of the last four years to see that the wonderful things actually accomplished were possible only through engineering in its most scientific and refined state. This was a conflict in which engineers matched wits with engineers the world over, resulting in the supremacy of the trained analytical mind capable of independent thought and action. In addition to the professional strength of their graduates the schools gave as leaders in the cause much of their present strength in faculty and students.

The Aim.

I just made the statement that the importance now given to engineering as a world influence should be chiefly credited to the technical school. This should not be interpreted to mean that all the men who have been doing big things in the engineering field have been technical school men. I mean rather, that the technical school for the past thirty years has been the stimulating factor in this country toward engineering development. The world produces many geniuses who do startling things in their own initiative. These men set the pace for others to follow and their works show clearly the need of educational institutions to disseminate their ideas. On the other hand the experiences of the last five years have shown that the motive force of the world is not the genius (although many of these have received their inspiration within the university atmosphere) but rather the large number of honest, conscientious men who have been taught to do their own thinking and are able to meet emergencies where they exist. That has been, is now and always will have to be the chief aim of the technical school. Four or five years give just enough time to acquire the fundamentals and the ability to apply these rationally to concrete cases. The technical university, therefore, does not claim to turn out finished engineers. Rather its aim is to give a man a general knowledge of his subject and a working knowledge of his own mind.

The Growth.

Looking back over the last forty years (this is the period of real development) the growth of the technical school has been quite as you would have expected it. Civil engineering, the already existing science was the first to establish courses, mechanical engineering came second, electrical engineering third and then architectural, chemical, mining and a number of specialized engineering lines in various orders as required by the section of the country in which the school was located. In most of these schools engineering proper has finally developed into four fundamental lines (called variously schools, departments and divisions), namely, civil, mechanical, electrical and chemical engineering, having the fundamental courses of the first and second years common to all, with the specializations in the last two years.

In addition to the four years courses usually given in most schools, a few are offering a fifth and sixth year to allow a broader academic training without sacrificing engineering essen-

tials. Some are establishing fellowships wherein part time research work may be carried on after graduation. Such work can only be done by men having special native qualifications and preparation. Many of the engineering schools are now establishing engineering experiment stations in which the more complex investigations may be carried on under the direction of trained specialists. Results from these investigations are usually printed in pamphlet form as monographs and distributed without charge.

The Needs of the Commercial Field

Any workman is a better workman for having an intelligent knowledge of his subject. Any man who can select the proper sized twist drill may be able to drill a hole in a casting, but the man who knows how to properly sharpen his drill may be able to double the output. The man who knows the fundamental laws governing the action of steam and water in pipes can run a better line of mains, and so it is in every line of work, the trained mind gives the workman the ability to be more or less independent of his environment. This is especially true in the heating and ventilating business. If the heating of our homes and places of business could be reduced to an absolute formula so that all we had to do were to apply that formula, then a workman could be trained to duplicate one job after another with increasing accuracy, but unfortunately this is not the case. Every job of heating is different from all other jobs in almost every respect. Standardization is not possible. Two houses equal in size have the same arrangement and floor plans. In corresponding rooms one is found to have casement windows while the other has closely fitted sliding windows. One is floored in the attic, the other is not. In one the workmanship is No. 1, the other is just thrown together. A house on paper is one thing, the realization of this house on its foundation is another thing entirely. The same is true of the actual installation of the pipes and fittings. One riser requires an offset, a main interferes with a beam, a difficult radiator connection has to be made, and almost innumerable other difficulties arise all of which demand good judgment based upon a thorough knowledge of the subject.

It is probably true that the heating profession calls for the exercise of more good gray matter and real common sense than almost any other line of engineering.

The Universities have realized this fact for some time and many of them have offered courses in the subject. These courses, naturally, are restricted to a minimum of time and vary in scope according to the vision of the field held by the professor in charge, but in all cases they deal with the applications of the fundamental laws of physics and thermodynamics to actual practice.

Theoretical and Practical Must Be Balanced.

The courses in many schools have been largely theoretical because of the lack of time and facilities for practical work. This, in a sense, tends to develop a one sided man but in schools this is a commendable development. It would be well if a large amount of actual practical experience could be had at the same time, but in most cases this is not possible. On the other hand the tendency of the trade is away from the theoretical and toward the impirical. As a result the average is good. This is as you may expect it to be. By the natural laws of mind development the young man is able to cultivate deeply analytical mental processes that would be wholly impossible to the average mature mind. For this reason, together with the fact that the professional and business man usually takes the imperical or short cut method in doing his daily tasks, there should be great stress laid upon the cultivation of analytical methods while in schools. Many times problems are given to the student to solve by exhaustive processes, when other and shorter methods are available, not so much for the final result as to serve as mental gymnastics and cultivate the ability to think for himself. I am aware of the fact that the schools are severely criticised at times because their graduates lack that practical touch so necessary to the practicing engineer. Some schools are meeting this situation by permitting a greater degree of specialization. For example, those intending to follow heating and ventilating work will be given a greater amount of drawing room time for the designs, and laboratory and commercial tests to check their theoretical studies. Necessarily, such an arrangement produces a higher degree of efficiency in the one line at the expense of other subjects which might be taken. This is a big question which is yet unsolved by educators, namely, which man is any firm's best asset, the one thoroughly grounded in the fundamentals with a fair amount of specialization, or the one only fairly well grounded in the fundamentals with much specialization. Personally I am firmly convinced that the former is the better plan. The highly specialized man would get into the thick of things more quickly and for a few years would lead in the race, but observations show that the conditions soon reverse.

Fundamentals for Heating and Ventilating.

You may be interested to know what fundamentals may be considered a requisite for a good course for an embryonic heating and ventilating engineer. The *first* I would suggest relates to his development as a man among men. He should have a good command of the English language and should be able to write and discuss upon any subject in a logical and persuasive way. This is usually slighted by the young engineer as applying to the other fellow but not especially to him. One of our greatest problems in teaching these men is to convince them that to rise to the top in their chosen profession they *must* pay attention to rhetoric, English composition and oral discussion. Many of our graduates in all lines of work have testified to their lack of this one essential in their early training. *Second*, they must be fundamentally grounded in theoretical and applied mathematics. This is a tool which will carve any figure known to science, if the owner knows how to use it. *Third*, physics or the study of the laws of matter, *fourth*, thermodynamics or the laws of heat energy and *fifth* the application and development of these fundamental laws into constructive practical problems. The last is the trade specialization and in this case is called *heating* and *ventilation*. The courses preceding and leading up to this subject need not necessarily be specialized in favor of heating and ventilating problems. In fact it will tend toward more independence of thought if this is not done. Any physical law in any subject to be well understood and to be the greatest value to any man must be presented in application as varied as possible to acquaint the student with its possibilities.

The subject of heating and ventilation is a specialization, although in itself it is sufficiently broad to satisfy the most exacting. For example, in the study of ventilation, questions of air conditioning in its relation to health, involving a knowledge of physiology and hygiene, present lines of thought that can not be satisfactorily analyzed by any of the fundamental courses mentioned. Here are questions that call for research work of a special character and different from that previously attempted by the profession. Unfortunately what we don't know about this phase of the subject at this time would fill many volumes. Suffice it to say that our treatment of these topics should be sane, logical and without hysteria or radicalism. Also in the study of chimneys, and furnace and fan-coil heating there are problems in air warming and air movement by convection and power devices that are as complex as we wish to make them. Also in hot water and steam isolated and district plants there are problems in heat generation and transmission that call for the most thorough theoretical training in physics and thermodynamics. And so on the list might be extended almost indefinitely.

Until a few years ago heating problems were satisfactorily

(Continued on Page 645)

MORE *and* BETTER SANITARY LAWS, ORDINANCES, RULES *and* SUPERVISION ESSENTIAL TODAY

Touching On a Few of the Most Important Points

By Arthur Bateman

(Continued from Page 557 in the December 18th Issue.)

EVERYONE will admit that a closet outside the building possesses countless advantages, especially on forms where it would not be convenient for the help to enter the house, but there are few forms or places without water these days, and wherever there is water a modern closet, proof against any climate, can be installed.

Anti-freezing or frost proof closets have been designed for installation in the most exposed positions, and will give satisfaction in the coldest climates. Their trap and water seal is from three to four ft. below ground level and provision for emptying every molecule of water, after the closet has been flushed, is also made.

Obviously, this type of closet frequently receives very rough usage and is therefore constructed of heavy cast iron, coated internally with enamel.

Flushometers are now taking the place of tanks for flushing closets, urinals, slop sinks, etc., and specific rules pertaining to the correct location of these should be written into every ordinance. If these are set below the level of the closet bowl there is always the danger of creating a by-pass between the system of water supply and the drainage system which might cause pollutions. This device is made in various forms by different manufacturers. Until a few years ago their use was confined to large public buildings, hotels, etc., but today they are extensively used in residences. The valve which is operated by means of a push button, may be worked under direct pressure, or tank pressure, but as already mentioned the valves should not be set underneath the closet, and the best results are obtained when a separate water service is used for these excellent devices alone.

Coming now to the disposal of sewage from farms, country residences and similar types of dwellings and buildings, we find that there is no uniformity in the ordinances or practice whatever. As a matter of fact most information given on the subject is not only misleading but exceedingly poor practice if carried out. The principles involved in every instance are the same, and there is no reason why hard and fast laws should not be universally adopted and enforced which would end, for all time, the troubles existing in connection with this important subject today.

Discharge of sewage over the ground or into a stream or lake is always dangerous. It is not always prohibited by law. A cesspool collects sewage, it does not reduce and purify it. It is more likely to pollute wells than the privy previ-

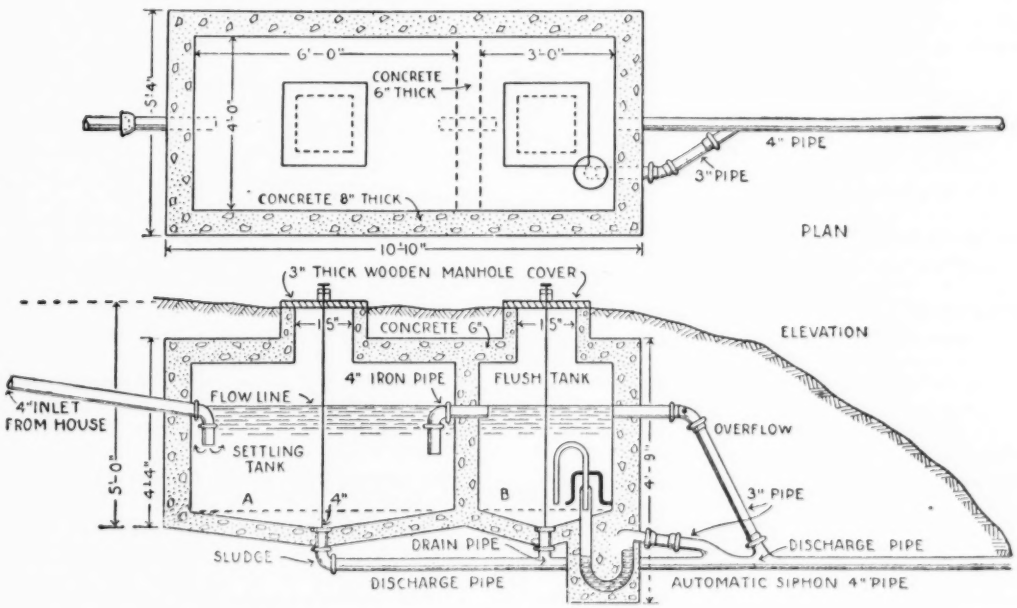


Fig. 6.

ously mentioned, as the large amount of water soaks off into the soil to great distances carrying filth and disease germs with it.

Modern science and inventions have developed a sanitary system of sewage disposal by means of bacteria, which is 99 per cent perfect in operation, is easy to construct, low in cost, and requires practically no attention.

The bacteria necessary for this work exist everywhere and all that is necessary is to provide the best conditions for them to live and multiply. Certain bacteria, called anaerobes because they thrive only where kept out of contact with air, have the power to reduce vegetable and animal solids to liquids and gases. Certain other bacteria, called aerobes because they thrive only when kept in contact with air, have the power to purify this liquid product produced by the anaerobes, by oxidizing in and reducing it to pure water and harmless gases.

The whole system, in a nutshell, consists of a concrete liquefying tank containing approximately 24 hours' supply of sewage, in which the depth of sewage is maintained at not less than 4 ft., and from which the sewage overflows into a smaller concrete siphon tank in which, whenever the liquefied sewage collects to a depth of 18 inches, it is discharged by an automatic siphon. A plan and section of a reliable system is shown in Fig. 6.

The siphon discharges the contents of the tank into a tile disposal field consisting of a main line of sewer pipe laid with cemented joints, and of branch lines of drain tile laid within 1 ft. of the surface of the ground, the capacity of the branch lines of tile, shown in Fig. 7, should be greater than the discharge from the siphon tank.

Wherever this disposal system is adopted, means must be provided to take care of ashes, waste paper, old broken bottles, cans and other kinds of garbage. Today there are millions of dumps or ashpits used for this purpose, but they should be abolished by law. They are so often placed in unfavorable and unsightly places. They are likely to have liquid wastes thrown into them and the result is secondary decomposition or putrefaction is set up. Moreover this liquid filth soaks into the ground, polluting same, and endangering any water supply that may be in their vicinity. Still further, a nuisance is nearly always created when they are emptied.

A covered portable galvanized iron dustin should supersede the unsanitary dumps and ashpits, for they can be placed in any convenient position, are inexpensive, easy to clean out, and rain being excluded the contents do not putrefy rapidly.

The refrigerator or icebox in which we store our foods needs to be very sanitary, yet if we were to make a survey of the millions in use today, how many would we find properly trapped and wasted? By far the largest majority of these are purchased from the furniture stores, hardware dealers, etc., and are dumped down in the most convenient position for the user. Thousands of owners do not even know that it is really important to trap and waste them.

Sometimes their attention is called to this matter by a leak on the floor under the box; this, of course, must be stopped, so a piece of hose pipe, rubber tubing, iron pipe, or the first handy thing that comes along is attached and allowed to discharge anywhere it will not make a mess.

Undoubtedly most ordinances call for a proper trap and waste pipe to be connected with the refrigerator, but as already mentioned, in most cases they are owned by the tenant of the building who is either ignorant of the existing laws, or totally disregards them.

It would be a wise plan to make it compulsory for every person who sells refrigerators to be conversant with the laws pertaining to their wastes, and to give definite and positive instructions regarding them to the purchasers.

Needless to say, every icebox should be trapped and the waste pipe should not discharge through the walls, on to an ash pit, or other dump, but on to a laundry tub, drip sink or, if these do not exist, on to a deep seal trap, which is usually found in the basement. It is, however, not necessary to revent the trap.

In flats and apartment buildings of several floors the boxes should be arranged in such a manner that they are fixed immediately above one another in a perpendicular line. Each should be separately trapped and discharged into a main waste line at least two inches in diameter. The individual traps and branch wastes may be 1 inch in diameter. The main waste should discharge with an open end on to a drip sink, laundry tub, or deep seal trap as before, but in this instance the main waste should be carried up through the roof and be increased at least 1 inch in diameter in passing through it, as shown in Fig. 8.

It is not necessary to revent each trap and waste pipe separately for at no time is there a sufficient volume of water passing through the waste line to displace the air in it, create a vacuum and set up siphonage.

Almost everyone knows that typhoid fever, cholera, and diarrhoea are water borne diseases. Our fighting men in France were constantly forbidden to taste the water in any well or receptacle unless allowed to do so by the officer in charge. Summer resort proprietors receive thousands of inquiries each

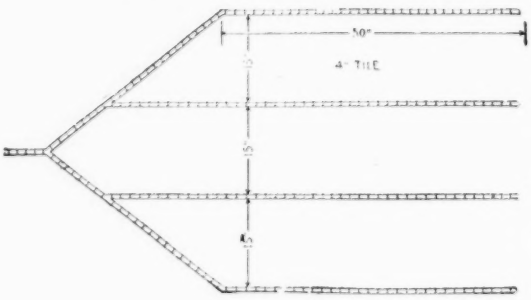


Fig. 7.

season from prospective visitors asking if the water supply is wholesome.

Wherever an ordinance exists, some mention is made concerning the receptacle used for storing water for dietic purposes. Many condemn lead and zinc for storage tanks, for some waters have a very solvent action on these metals, and if a small quantity of either is dissolved in the water the consumers will suffer and probably die from lead or zinc poisoning.

As this question is so vastly important and such large numbers are likely to be stricken at one time, it is advisable to look well to any existing code, or to bear this point in mind when drawing up a new one.

Another item that can be mentioned with advantage is the connections between the water closet and the closet bend. The following question has been asked the writer many hundred times "What's the matter with a putty joint between the closet and bend?" Everything! Putty is made of oil and whitening. After the closet is installed for some time the oil dries, and out of thousands tested with the smoke test we have yet to see one of these connections smoke tight, which means, of course, they are not air tight. Further, in pressing the closet into position, very often a roll of putty is squeezed into the bend which reduces its diameter and tends to form a stoppage, as it catches all paper and other foreign matter passing through the closet.

There seems to be no uniformity whatever with regard to vent terminals passing through the roof. Some codes simply say the vent should terminate through the roof. Others say that it shall terminate at least 2 ft. above the roof. Still others

stipulate that these shall be carried above the ridge of the roof, if there be one, and shall be at least 12 ft. away from any window, and others insist that the vent be increased at least 1 inch in diameter 10 inches below the roof and terminate 8 inches above it, as shown in Fig. 9.

The object of the increase is to prevent the terminal from being closed by hoar frost. Again, in cold weather, the heavy air at the terminal tends to check the up-current if not increased. Obviously, these dangers are greater in 2 and 3-inch pipes, and no vent terminal should ever be less than 4 inches internal diameter.

In theory, the correct place for the terminal would be flush with the roof, but snow would be likely to bury this during the winter season. The rain would also splash off the roof into it, cool the air inside and interfere with the up-current. For this reason 8 inches above the roof is considered by many the correct height above the roof.

The sun shining on, and warming the terminal 2 ft. and more above the roof causes the air inside them to expand and increases very materially the up-current. However, in cold weather the greater exposed surface makes the air heavier in them and acts as a damper on the escaping air. This would indicate that local climatic conditions will govern the size and positions of vent terminals.

In closing, mention must be made of the imperativeness of

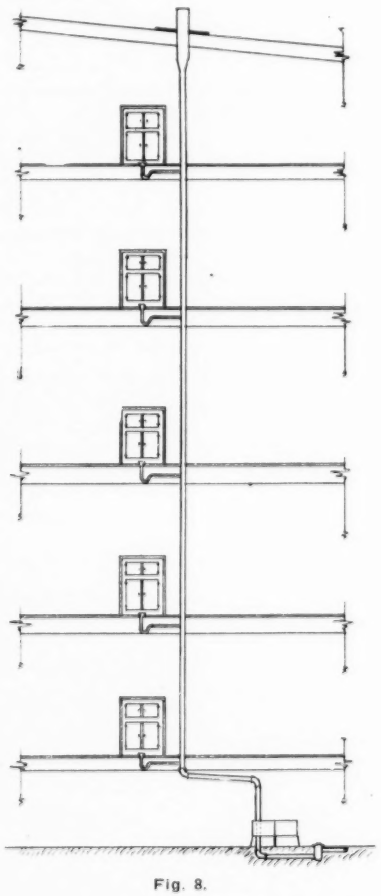


Fig. 8.

appointing a sufficient number of inspectors to enable a final inspection to be made after all work is completed. A final test is most important in as much as any defects occurring in a fixture connection would be detected in addition to the requirements for light, local ventilation, floor covering of toilet rooms, adequate water supply to closets and urinals, and the proper setting of flushometer valves, etc. The house sewer should be capable of withstanding a 10-ft. head of water or a 5 pound pressure of air or smoke.

The government, in particular, should be in a reciprocative state of mind to accept our contention in this respect and lend

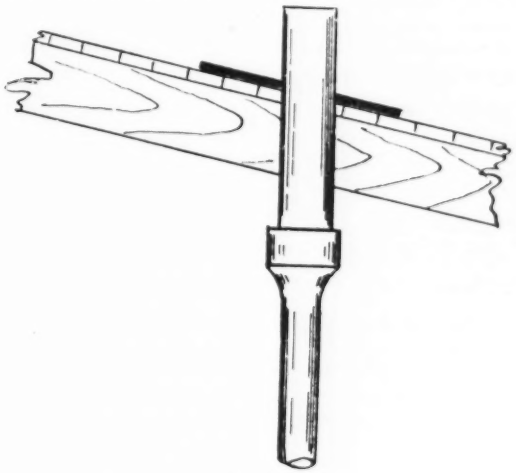


Fig. 9.

us all possible aid, for the war taught it the value of thorough inspection of all products used by it for war purposes.

The public also favor this plan. It is safe to assume that the owner of every building, whether it be a home, factory, store, workshop, garage, barn, or office, takes out a fire insurance policy. He is very careful to protect himself against loss in this direction, but what about the buildings that have not been inspected by the plumbing or sanitary inspector? Few lives are lost through fire as compared with inefficient sanitary procedures, and money loss should certainly come second to loss of life. The head of every family and every corporation should not only have a written guarantee that the sanitary work is perfect upon the completion of the building, but should have it inspected and tested periodically.

There's not the slightest doubt that more and better laws compiled with more rigid inspection are needed at this time but in order to bring about ideal results it is necessary for the government, the states, cities, towns, villages and rural communities, as well as the general public, to work as a unit for a common good.

Hartford, Conn.—W. E. Oakes, 65 Cabot Street, is to install heating in the residence being erected on Hillside Avenue for W. J. Pierce.

Dayton, Ohio.—W. J. Keller, 315 Fairview Avenue, has the contract to install the plumbing in the $8,000 residence being built by Fred Fleishauer, 1310 East Harvard Boulevard.

Utica, N. Y.—A. Failing, 1644 Miller Street, has the contract to install the plumbing in a two-story $10,000 residence being erected in this city at Holland and Pleasant Streets.

Boston, Mass.—Isaac Coffin, 52 Sudbury Street, has been awarded the contract to install the plumbing and heating systems in the $70,000 grade school that is being erected in Dedham, Mass.

Saranac Lake, N. Y.—Walton Towsley, Main Street, is to install the plumbing system in a $12,000 store and apartment building being erected here adjacent the Berkley Hotel for Walter Sagendorf.

Bristol, Conn.—F. A. Shafer Co., 240 Main Street, has the plumbing contract, and Libby & Blinn, 164 Main Street, Hartford, the heating contract on the $50,000 two-story office building under construction in Bristol.

"A POUND *of* STEAM"

Practical Information, Carefully Explained, Concerning Factors in Heating Work

By L. M. Emmett

JUST what is the relation of "a pound of steam" to the amount of heating to be done in a given room? And what is the relation of the term "British thermal unit", to the pound of steam? And what does "horse-power" mean, translated to terms of direct radiation? What is the difference in heating effect of high pressure and low pressure steam?

These are all questions of great interest to the heating contractor, when he gets away from ordinary direct low pressure heating, using cast iron radiators and a low pressure heating boiler; under these latter conditions he merely takes the radiators of given number of sq. ft., allows some recommended proportion of margin, and selects a boiler of required size, as catalogued.

But occasionally a case comes up which cannot be worked out from the catalogues. The contractor is confronted with the problem of heating a plant using, we will say, 1½-inch pipe coils, and the owner informs him he will have a 10 horse power engine, the exhaust from which may be used to do the heating. The plant is to be heated to 60 degrees at zero, and the exhaust will be at 5 lbs.

Solving the Problem.

We will say for purposes of illustration that the quantities measure as follows:

Cubic contents, 84,300 cu. ft.

18-inch brick wall 4,500, less glass 1,500, net 3,000 sq. ft.

Glass 1,500 sq. ft.

2-inch board and composition roof 5,600, less skylight 1,200, net 4,400 sq. ft.

Skylight, 1,200 sq. ft.

The plant will have 60 employes. The state factory law requiring 1,800 cu. ft. of air per hour per person would amount to 108,000 cu. ft. As some of the manufacturing operations create slight fumes and smoke, we will allow 1½ changes of air per hour. We will figure the heat losses in terms of British thermal units.

B. t. u. per hour for heating cu. ft. of air = .02 per degree.

B. t. u. loss through 18-inch brick wall = .25 per deg. diff.

B. t. u. loss through roof 2-inch board and comp. = .3 per deg. diff.

B. t. u. loss through glass = 1.1 per deg. diff.

B. t. u. loss through skylight = 1.1 per deg. diff.

This becomes:

84,300 cu. ft. × 1½ × .02 = 2,529; 3,000 sq. ft. wall × 25 = 750; 1,500 sq. ft. glass × 1.1 = 1,650; 4,400 sq. ft. roof × .3 = 1,320; 1,200 sq. ft. skylight × 1.1 = 1,320, or 7,569 B. t. u. per degree difference between exterior and interior. In this case it is 60 degrees, hence the total B. t. u. loss per hour will be 454,140.

In steam heating, practically all of the heating is accomplished by condensing the steam; the heat stored in the steam, known as latent heat, is thus given up; some heat is also given up by the condensation, but no special provision is made for this, and it is, in medium pressures, so slight as not to do more than round out the figures.

Amount of Latent Heat in Steam.

The latent heat stored in steam, varies with the pressure, becoming less per pound as the pressure increases. At 0 gauge the total heat in the steam in B. t. u.'s is 1,146; the latent heat 966; the temperature indicated on a Fahrenheit thermometer is 212 degrees.

At other pressures this is as follows:

Gauge Pressure	Total heat above 32 deg.	Latent Heat	Fahrenheit temperature
2 lb.	1,148	960	220
5 lb.	1,151	953	227
15 lb.	1,158	938	250
20 lb.	1,160	932	260
30 lb.	1,165	921	274
50 lb	1,172	904	298
75 lb.	1,179	888	320
100 lb.	1,184	876	338

For all practical purposes, affecting heating work, the total B. t. u. given up by a pound weight of steam condensing to a pound of water may be taken as 1,000. This simplifies calculation, and is also easy to remember.

The Condensation of Steam in Radiator.

Steam is condensed inside a radiator, due to the temperature difference between the radiating surface and the surrounding air. Manifestly the greater this difference, the more rapid will be the condensation. The shape of the surface, its physical properties and its location, affect, of course, the movement of air, and hence this temperature difference. That is the reason why no fixed rule may be laid down which will serve for any and all kinds of direct radiation. Commercially the emission of all radiators is now regarded as 240 B. t. u. per hour for steam. There is, however, a wide range of heat emission from radiators of varying heights and widths; the length also affects the emission, but not materially. This B. t. u. delivery is meant to cover ordinary room and steam temperature. It will vary of course as these elements vary. 3 col. 38-inch radiation may be considered to have a factor of 1.67 B. t. u. per degree difference between the heating surface and the room temperature. The emission for pipe in still air at 60 degrees is as follows:

Size pipe	B. t. u emitted per sq. ft. per degree diff. in temperature of surface and surrounding air.
¾ inch	2.70
1 inch	2.53
1¼ inches	2.37
1½ inches	2.20
2 inches	1.94
2½ inches	1.89
3 inches	1.87
3½ inches	1.85
4 inches	1.84

The Number of B. T. U. In a Pound of Steam.

It is more convenient to regard the delivery of cast

iron steam radiators as 250, since there is usually a variation anyhow, and also regard a pound of steam as representing 1,000 B. t. u. of latent heat.

This makes a convenient calculation, since at those rates a sq. ft. of cast iron steam radiation is equivalent to ¼ lb. of steam, or 1 lb. of steam = 4 sq. ft. of radiation. Further it makes possible a quick calculation of British thermal units into terms of "pounds of steam" or "square feet of radiation". Striking off the three right-hand figures in any given total of B. t. u. per hour, the remaining figures will represent "pounds of steam per hour"; this quantity, multiplied by 4 will be the equivalent sq. ft. of direct cast iron radiation.

However, when temperatures of steam or that of the heating to be done, varies from usual temperature, and when other than direct cast iron radiation is used, other factors must be used. For instance, in the problem presented in the first portion of this article, the required interior temperature is 60 degrees and the temperature of the steam is 227 degrees. The total B. t. u. to be replaced is 454,140, and 1½-inch pipe coils are to be the heating surface. We will figure the required sq. ft. of pipe surface. The emission for 1½-inch pipe is given as 2.2 B. t. u. per degree difference; this difference is 227 — 60 = 167 degrees; this × 2.2 = 367 B. t. u. per sq. ft.; 454,140 ÷ 367 = 1,238 sq. ft. of 1½-inch pipe, or, in round numbers, 2,476 lineal ft.

The Amount of Heat in One Horsepower of Steam.

Now, as to the matter of horse power, an engine horse power is equivalent to lifting 33,000 lb. per minute, 1 ft. high. This quantity was set down by James Watt as being the equivalent of the work performed by the heavy draft-horses of his time. The amount of steam required by the engines used then, to accomplish this result, was very great. But improvements were made from time to time, until at the Centennial Exposition of 1876 the best engines were developing a horse power on 30 lb. of steam, with a feed water temperature of 100 degrees F. This amount was set down as a boiler horse power, the intention being to standardize boiler horse-power, and engine horse-power so that the term "horse-power" would be the same for both. Very good reasoning; but, improvements continued, until now some highly perfected apparatus develops an engine horse-power on 10 or 11 pounds of steam. So that the Centennial standard has come to mean boiler horse-power only, and the quantity of 30 lb. from a feed water temperature of 100 degrees is now expressed in its equivalent of 34½ lb. of water at 212 degrees to steam at 212 degrees, or in its briefer form "34½ lb. from and at."

Now in the problem before us, we require 454 lb. of steam per hour. We find on inquiry that the 10 horse-power engine develops a horse-power on 25 lb. of steam. That gives us 250 lb. of steam per hour; not enough to do the heating. We will have to specify a boiler larger than needed for the engine. Since it is a small plant, we had best allow 25 per cent margin; that will be 454 + 25 per cent = 568 lb. steam; 568 ÷ 34½ = 16½ h. p. boiler. Allowing 10 sq. ft. of heating surface to each horse-power developed would call for a boiler having 165 sq. ft. of heating surface. The additional steam needed for the heating plant, over that furnished by the engine exhaust would be supplied by placing a pressure regulating valve on a line connected to the high pressure supply and connecting this into the heating main; the exhaust from the engine being furnished with a back pressure valve on the discharge to the atmosphere, and a connection made from the exhaust to the heating main.

The heating effect of high pressure steam is much greater than low pressure, principally because of the difference in temperature of the heating surface and the surrounding air. For instance in the problem given heretofore, if instead of 5 lb. pressure, it was 50 lb., with a temperature of 298, the calculation would be: 298 — 60 = 238 degrees; this × 2.2 = 524 B. t. u. per square foot; 454,140 ÷ 524 = 867 sq. ft. of 1½-inch pipe or 1,734 lineal feet, in round numbers.

Live steam at reduced pressure is at the same temperature as exhaust steam at the same pressure. Therefore, the heating effect may be regarded as being the same. There is much difference of opinion as to whether or not this is really so. If there is any difference at all, it is probably due to the pulsating effect of the engine.

January 18, 19 and 20, 1921.—The twenty-seventh annual convention of the Wisconsin Master Plumbers' Association, in Milwaukee, with headquarters at the Hotel Wisconsin.

January 18, 19 and 20, 1921.—The annual convention of the Iowa Master Plumbers' Association, at Burlington, Iowa, with headquarters at the Burlington Hotel.

January 25, 26 and 27, 1921.—The annual convention of the Illinois Master Plumbers' Association, in Springfield, Ill.

January 25, 26, 27 and 28, 1921.—The annual meeting of the American Society of Heating and Ventilating Engineers. The business session of the meeting will be held in New York City, January 25th, and the professional sessions will probably be held in Philadelphia, January 26th to 28th.

February 1, 2 and 3, 1921.—The Thirtieth Annual Convention of the Ohio State Association of Master Plumbers, at Toledo, with headquarters at the Hotel Secor.

February 7, 8, 9, 10 and 11, 1921.—The annual convention of the Minnesota Society of Sanitary and Heating Engineers, at Minneapolis, Minn.

February 10, 11 and 12, 1921.—The annual convention of Montana Master Plumbers' Association, at Billings.

March 7 and 8, 1921.—The annual convention of the South Dakota Retail Plumbers Association, at Aberdeen, South Dakota.

March 8 and 9, 1921—The annual convention of the North Dakota Master Plumbers' Association, at Fargo.

March 14 and 15, 1921.—The annual convention of Kansas Master Plumbers' Association, at Topeka, Kans.

March 14, 15 and 16, 1921.—The annual convention of the Indiana Society of Sanitary Engineers, in Muncie, Ind.

March 21, 22 and 23, 1921.—The annual convention of Missouri Master Plumbers' Association, at Columbia, Mo.

March 22, 23 and 24, 1921.—Regular quarterly meeting of the National Association of Brass Manufacturers, in Chicago.

April 5, 1921.—Annual convention of the Massachusetts State Association of Master Plumbers, at Boston.

May 9, 10 and 11, 1921.—The annual convention of Kentucky Master Plumbers' Association, at Covington, Ky.

June 7, 8 and 9, 1921.—The 39th annual convention of the National Association of Master Plumbers, at New Orleans, La. Hotel headquarters will be announced later.

Turn to page 24 of this issue and learn how you have an opportunity to win $25. Tear out this page and post it in your shop or office, and get your employes to send in slogans. Help the "Take a Bath Every Day" campaign.

QUESTIONS & ANSWERS

This department is a clearing house for ideas and is open to every reader of "Domestic Engineering." Problems sent in are replied to at the earliest possible moment by "Domestic Engineering," and this department can be made more valuable if readers themselves will help the man who needs assistance. Read the questions and answers. If you have had similar problems, or know from experience how the faults can be remedied, do not hesitate to send in your comment or criticism. It will be some satisfaction to you to know that you have helped a fellow craftsman and a pleasure for us to pass on the data. "Every man owes some of his time to the upbuilding of the profession to which he belongs."

HOW TO REMEDY DEFECTIVE HOT WATER CIRCULATION TO DISTANT POINTS.

Editor "Domestic Engineering:" A rough sketch of a hot water circulation that does not circulate is shown in Fig. 1. Fairly hot water is delivered at point No. 1, but it never gets to points Nos. 2 and 3. The boiler is large and seldom heats all the way down, and the circulation line is a long one. The

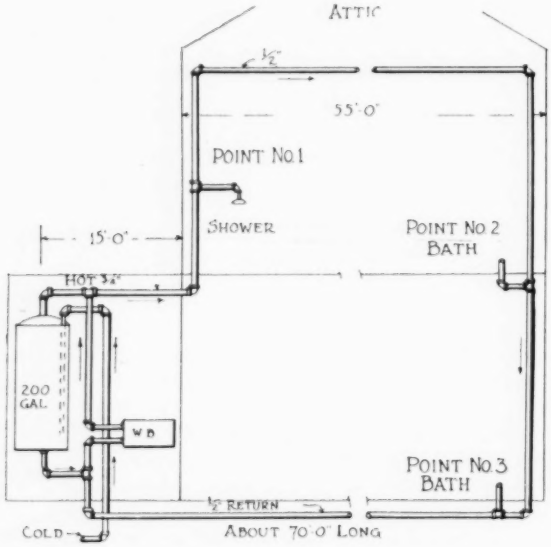


Fig. 1.

size of the circulation line is small, and it returns back under the ground and is tied in at the point shown.

Kindly give this space in your valuable paper with such corrections, as you deem necessary to make the hot water circulate to points Nos. 2 and 3.

Georgia. P. L. M.

There are three defects in this layout.

First, the piping is too small all around the circuit. Second, the top of the loop which is the ½-inch pipe 55 ft. long in attic is liable to become air bound. Third, there should be a light swing check on the return line between point No. 3 and the boiler.

Every one of these defects operate to prevent hot water from being drawn satisfactorily at points 2 and 3.

We must realize that the circuit is approximately 70+55+30 +30=185 ft. long. The short run from top of boiler to shower is ¾-inch pipe. The remainder is ½-inch and perhaps not reamed at the pipe ends.

True, the circulating head is high being equal to approximately 20 ft. But even that cannot drive the necessary volume of hot water through the ½-inch line. The remedy for the first mentioned defect is to increase the pipe to at least ¾-inch all around the loop. That is to say, if a first-class installation is intended.

In addition to that the hot water rises from boiler to attic and all the line in attic should be insulated with good hair felt and canvas covering.

The remedy for second mentioned defect is take the supply for shower from top of main in attic and not from the rising line. The point where this connection is taken off must be the very highest point in the loop, so that all air will gather at that point and be drawn off with the water every time the shower is used.

If it is inconvenient to connect the shower that way then let the other end of attic line be the highest and take the branch to the lavatory in bath at point No. 2 from this highest point of the loop. Fig 2 shows a good way to make such a connection. It is provided with an air accumulating chamber, which will gather the air bubbles at times when the fixture so supplied is not in use.

The third defect is the lack of a check valve on the circulation line, which permits cold water to be drawn at points 2 and 3, from bottom of boiler.

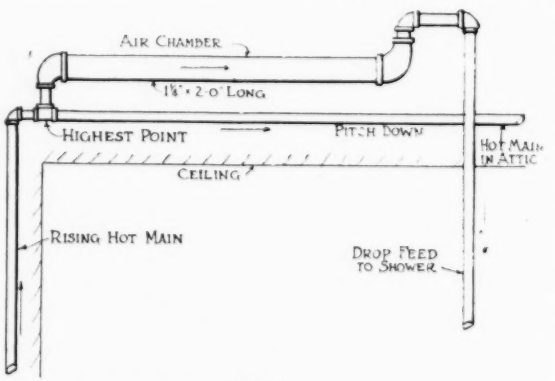


Fig. 2.

The check valve is required to prevent this back flow which certainly will exist in correspondent's layout. It may be connected at basement ceiling as shown in Fig. 3.

The check valve should be attached on the angle of 45

degrees as shown. The flapper should be very light, preferably of 10 ounce cold rolled sheet copper, instead of heavy cast brass. The flapper will then be easily opened by the force of circulation and will close automatically when a faucet is opened on the hot lines.

This action compels all hot water to be drawn directly from top of boiler and none from bottom of boiler. Yet it permits a free circulation when no hot water is being drawn.

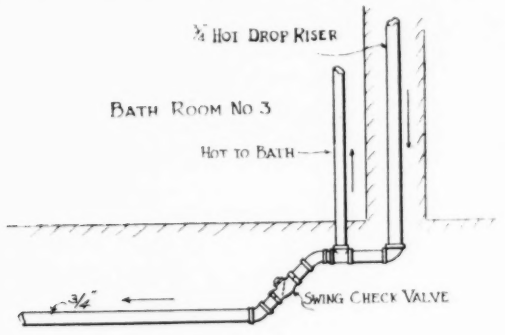


Fig. 3.

If it is impossible now for you to take out the ½-inch pipe and replace it with ¾-inch, or better still, 1-inch, then make the other changes mentioned. But we cannot state that the circulation will be satisfactory. It may. It should at least be very much improved.

We trust the foregoing suggestions will help, and we wish you success.

THE LIFTING POWER OF SUBMERGED FLOATS.

Editor "Domestic Engineering":—There is a mix-up between a tank builder and a plumbing contractor regarding the lifting power of submerged floats of different forms when entirely submerged in water. We would like to ask you to help us out.

Kindly examine sketch Fig. 1. Is the lifting power more than the side pressure?

Is there most pressure at A or B? Also please examine

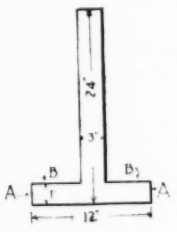


Fig. 1.

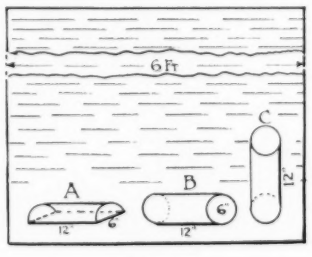


Fig. 2.

Fig. 2 and state which of these three floats has the greatest lifting power. They are all submerged 24 ft. under water.

Kansas City, Mo. S. D. R. L.

The pressure per square inch of surface at A is greater than that at B because A is deeper under water.

The pressure at A does not tend to push down or lift up the float. It just tends to squeeze the sides AA together if the pressure is applied externally as would be the case with a float.

The pressure on disc B pushes the float down but it is counteracted by another and opposite force at the bottom disc which pushes upward.

The lifting power of the floats shown in Figs. 1 and 2, and indeed in all floats of whatever form is equal to the weight of water displaced minus the dead weight of the float. The shape has nothing to do with the lifting power except inasmuch as it increases or reduces the volume of the float.

In Fig 2 the float B and C have the same lifting power, if they are the same weight because their displacements are the same.

The float A, however, only has half the volume of B or C and consequently is only half as powerful, assuming that it is also half the weight.

THE TEMPERATURE OF STEAM AT RADIATORS AT VARIOUS BOILER PRESSURES.

Editor "Domestic Engineering":—Can you furnish me with a table giving the temperature of steam at radiators at the various boiler pressures? I have E. R. Pierce's "Practical Manual of Steam and Hot Water Heating," which has a table giving these pressures and temperatures on low pressure work up to fifteen pounds, but I would like to know of temperatures at higher pressures.

Maine. P. G. A.

A comparison of the figures of various authorities, giving the weight and volume of steam per cu. ft. at various pressures, show quite a little difference. A good many engineers use Peabody's Tables.

Prof. Wm. Kent has assembled a table taken from various authorities of which he says: "The figures for temperature, total heat and latent heat, are taken from Porter's Steam-engine Indicator (Porter's figures are based on the experiments of Fairbairn and Tate). The figures, weight per cu. ft. and cu. ft. per pound, are taken from Dweishauvers-Dery's table as being probably more accurate than those of Porter."

We publish herewith a part of this table—that giving temperature, volume per cu. ft. and weight in pounds per cu. ft., for pressures in pounds (absolute) from 1 to 30, then increasing in multiples of 5 to 100, and by multiples of 10 to 150. We also give the gauge pressure corresponding to absolute for the entire table.

Properties of Steam.

Gauge Pressure	Absolute Pressure	Temperature Deg. Fahr.	Cu. Ft. in 1 lb.	Weight, Pounds Per Cu. Ft.
	14.70	212	26.36	.03794
0.3	15	213.0	25.87	.03868
1.3	16	216.3	24.33	.04110
2.3	17	219.4	23.98	.04352
3.3	18	222.4	21.78	.04592
4.3	19	225.2	20.70	.04831
5.3	20	227.9	19.72	.05070
6.3	21	230.5	18.84	.05308
7.3	22	233.0	18.03	.05545
8.3	23	235.4	17.30	.05782
9.3	24	237.8	16.62	.06018
10.3	25	240.0	15.99	.06253
11.3	26	242.2	15.42	.06487
12.3	27	244.3	14.88	.06721
13.3	28	246.3	14.67	.06955
14.3	29	248.3	14.38	.07188
15.3	30	250.2	13.48	.07420
20.3	35	259.2	11.66	.08576
25.3	40	267.2	10.51	.09731
30.3	45	274.3	9.21	.1086
35.3	50	280.9	8.34	.1198
40.3	55	286.9	7.63	.1311
45.3	60	292.5	7.03	.1422
50.3	65	297.8	6.53	.1533
55.3	70	302.7	6.09	.1643
60.3	75	307.4	5.71	.1753
65.3	80	311.8	5.37	.1862
70.3	85	316	5.07	.1971
75.3	90	320.3	4.81	.2080
80.3	95	323.9	4.57	.2188
85.3	100	327.6	4.36	.2296
95.3	110	334.5	3.98	.2510
105.3	120	341.0	3.67	.2724
115.3	130	347.1	3.41	.2936
125.3	140	352.8	3.18	.3147
135.3	150	358.2	2.98	.3358

Are you good at inventing slogans? Try your hand in the slogan contest announced on page 24 of this issue. There's $25 for the winner.

TIME REQUIRED *to* INSTALL GAS APPLIANCES *and* PIPING

Information Collected from an Analysis of Approximately 2,500 Time Sheets

By A. G. Drury

In Two Parts—Part 2.

GENERAL HOUSE PIPING.

Concealed and Exposed.—One, Two or Three Floors.

IN the following tables on general house piping, the typical divisions were made as to the number of floors in the house which was piped, or the number of floors throughout which the piping and the installation of lights and appliances was distributed.

A large majority of houses have a basement, and here the meter is always placed when feasible. "One floor" piping tables include jobs done in one-story houses, i. e. a basement, in which the meter is installed, and the outlets for the appliances and lights located on the living or ground floor.

They also include outlets for setting of appliances or lights in the basement only, or in cases of two-story houses in the second story only. The analysis of the time sheets showed that the difference in "time required" to make two such unequal installations was reasonably accounted for by the greater number of ft. of pipe and fittings used in the larger job as compared to the smaller.

However, where outlets for appliances or lights were installed in the basement, and the first floor, such cases were classed as "Two floor" jobs, and the figures in the tables for two floors would apply.

In like manner locating outlets on the first and second floors in a two-story house would be considered a "two floor" job, while if they were placed in the basement also the figures for 3-floor jobs obtain.

In other words, a floor which has no piping for lights or appliances installed in it is entirely disregarded.

In the tables on two and three-floor jobs, the figures are for the piping only, unless otherwise stated.

One Floor.—4 Outlets.

Piping only, i. e. without connecting lights or appliances, or flue.

Average number of fittings used 25.

Ft. of Pipe	Time Required—Hours Maximum	Minimum	Average
60	5	4	4.5
70	8	5	6.5
80	10	7	8.5
90	14	9	12.0
100	16.5	11	14
110	18	13	16
120	19	16	17.5
130	20	16	18

One Floor.—4 Outlets.

Piping installed, and appliances or lights connected, also flue connection.

Average number of fittings used 33.

Ft. of Pipe	Time Required—Hours Maximum	Minimum	Average
60	12	10	11
70	14	11	12.5
80	16	12	14
90	17	12	15.5
100	18	13	16.5
110	19	14	17
120	19.5	15	17.5
135	20.5	16	18.5
150	21	17	19

One Floor.—5 Outlets.

Piping only. Average number of fittings used—26.

Ft. of Pipe	Time Required—Hours Maximum	Minimum	Average
70	14	8.5	11
80	16	10.5	13.5
90	18	12.5	15.5
100	20	14.5	17.5
115	23.5	17	20.5
130	27	20	23.5
150	30.5	24	27.5

Five Outlets.

Piping and connecting lights or appliances and any necessary flue connections. Average number of fittings used—35.

Ft. of Pipe	Time Required—Hours Maximum	Minimum	Average
70	17	9.5	13
80	19	12	16
90	22	15	18.5
100	24.5	17.5	21
115	28	21	25
130	32	25	29
150	38	31	35

Tables of Piping Only.

In the following tables for piping only, should it be desired to estimate also the time required to attach lights or appliances the figures given in the following table should be added for each light or appliance connected.

The table contemplates no additional special piping, but simply setting up and connecting the appliance.

Type of Appliance	Without Flue Connection	With Flue Connection
Side lights	¼	.....
Center lights (cluster)	½	.....
Kitchen ranges	¾	1¼
Laundry stoves	¾	.....
Hot plates	¾	.....
Water Heaters—Hot Stream	2¼	3
Augmore	1¾	2½
Estate	1¾	2½

Where special piping is required add to the tables of piping only, the figures given in the previous tables for the time required to connect the various kinds of appliances, according to the number of feet of special additional piping needed.

One Floor.—Six Outlets.

Piping only. Average number of fittings used—30.

Ft. of Pipe	Time Required—Hours Maximum	Minimum	Average
70	15	10	12.5
80	17	11.5	14.5
90	19	13.5	16.5
100	21	15.5	18.5
115	24.5	18	22.5
130	28	21	24.5
150	32	25	28.5
180	35	27	31

Piping for Two or Three Floors.

In the examination of the time and material reports for house piping of more than one floor, the results showed that the plan of making separate tables according to the number of outlets gave results less satisfactory than that of having but one table for two floors and one for three. The reasons for this were as follows:

1—The analysis showed that the time required to make the installation depended less on the number of outlets than on the number of feet and fittings.

2—Making a separate table for each number of outlets resulted in too many tables.

3—While there was an appreciable difference between the times recorded for the table of 5 outlets and one for 15, the intervening successive tables showed so little difference as to appear almost repetition.

The piping was mostly concealed work, occasionally however appliances were piped for with exposed work.

In some cases appliances were connected, but the table should be used for piping only, and where the appliances are to be connected, allow additional time for this, as shown by the preceding tables for "Piping Only."

Two Floors.—Exposed and Concealed Piping Only.

Ft. of Pipe	Number of Fittings			Time Required—Hours		
	Max.	Min.	Average	Max.	Min.	Average
100	42	18	30	20	12	17
125	48	25	35	25	13	20
150	56	28	42	30	16	23
175	65	35	50	36	20	27
200	74	46	60	42	25	33
225	82	54	68	45	30	37
250	90	63	78	48	34	42
275	100	72	88	52	38	46
300	108	80	96	56	42	50
325	117	88	105	60	46	55
350	125	96	113	65	51	59
375	134	108	122	70	56	63
400	142	115	130	75	60	68

Three Floors.—Piping Only.

Ft. of Pipe	Number of Fittings			Time Required—Hours		
	Max.	Min.	Average	Max.	Min.	Average
150	68	52	60	33	22	27
175	77	56	65	38	27	33
200	85	60	70	43	33	38
225	93	63	78	47	37	42
250	103	70	85	52	42	47
275	111	76	92	57	46	51
300	120	83	100	63	50	56
325	130	90	110	65	54	59
350	138	96	118	68	57	63
375	146	102	125	73	61	67
400	155	109	132	77	64	70
425	165	115	140	80	67	73
450	174	122	148	83	70	76
475	183	129	155	86	72	79
500	192	134	162	88	75	82

WHAT THE "OWN YOUR HOME" EXPOSITIONS MEAN.

Just what the "Own Your Home" Expositions mean is best illustrated by the following extracts from a letter written by Robert H. Sexton, managing director of the "Own Your Home" Expositions, to a member of the Real Estate Board of Chicago:

"The 'Own Your Home' Campaign contemplates the active co-operation of all interests in constructively planning for and bringing about:

"A. The financing of the home by moulding public opinion, which includes the banks and lenders of money, to the effect that the home is the best insurance of good government, better citizenship and the best stabilizer of labor and banking credit.

"B. Adequate supply of building materials, promoting better production and distribution facilities, so that the law of supply and demand which governs prices, may eventually stabilize building costs.

"C. Creating a never-ceasing heart-felt desire in all American citizens to own their own homes, to the end that they may become a contented productive, law-abiding force in their respective communities.

"D. To create a sentiment of thrift that will induce every homeless or rent-paying person to begin saving 'now' to enable them to make the initial payment for the home they will eventually own.

"E. To induce those who have the money to buy, or build 'now.' It has been well said 'the man who builds his own home, does not build for profit.'

"These appear to be the most prominent and outstanding points at issue. I firmly believe that nothing of permanent advantage is gained by waiting for conditions to change of themselves. Fortunately, I find the majority of thinking men willing to co-operate to alleviate present conditions.

"We are working on the theory that a 'bad situation left alone, constantly grows worse.' Sixty per cent of the people of the United States are homeless and, to quote from a speech recently made before the Stockton Rotary Club by F. Roger Miller, of Macon, Ga., 'In that mob of three thousand, surging like vandals through the western city I mentioned, not one rioter was found to own his home,' would carry out the idea that it is better to act now than to wait and regret.

"I am hoping and still have confidence that the calm, dispassionate view of business men will prevail and that all interests will be harmonized into an active working force to produce more and better homes."

Why People Should Build Now.

Opinion prevails among many well informed building experts that building can be done for as low a cost within the next six months as within the next three years. Labor is becoming more efficient, for self interest compels it to be. Land is cheaper than it will ever be again. Population makes land values. With an increasing birth rate and a rapidly increasing immigration since the war, land values are jumping and will jump still higher. We can make no more land. Three-fourths of life's anxieties are over when a man owns his home. It improves his standing, his credit, his pride, his manhood and his citizenship.

Exhibits to Be Practical and Educational.

Suggestions have been made by various organizations that the exhibits of labor-saving devices, lighting and heating appliances at the expositions be practical as well as educational. In other words, the exhibits must not be simply displays as seen in shops and stores, but must be in actual operation in the various rooms of the home. In addition, the piping and wiring of homes must be shown, with the various outlets so displayed that the prospective home builder will understand. Exhibits of washing machines, vacuum sweepers and the like will be welcome, but they must be presented in actual working order in the home, with the outlets for their use indicated so that the home owner may have a practical knowledge of the subject.

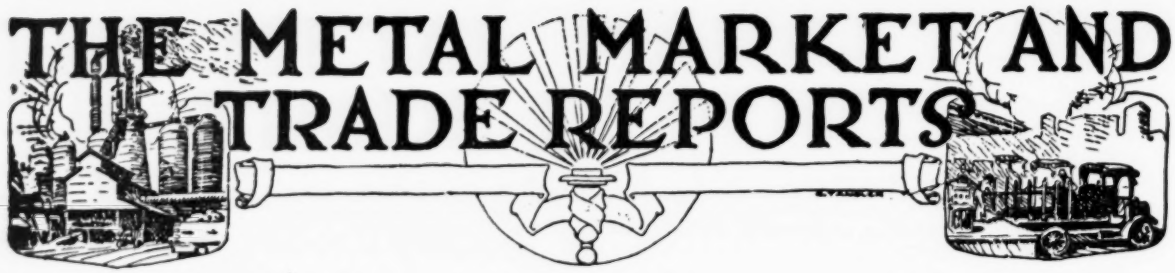
Building Material Men Co-Operate.

All branches of the building material trades were represented at an enthusiastic meeting held last week at the Old Colony Club in Chicago. Charles P. Thompson, chairman of the Building Materials Committee of the First Annual "Own Your Home" Exposition in Chicago, presided.

Fire losses in the United States amount to $2,000,000 a day, including cost of fire protection. Actual average losses for the last ten years have been $242,201,600, or more than one-quarter of the amount spent annually for new building construction.

Suit to restrain 41 steam roads, operating in Ohio, from putting into effect rates and fares corresponding to those prescribed for interstate freight and passenger traffic, has been filed by the attorney general on behalf of the State of Ohio.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

Revision of prices in iron and steel products, where there is any difference between independent interests and the Steel Corporation, are expected to show in the next few weeks in a formal manner. Preliminary announcements of this coming change in wire and nails, and some say in pipe, are looked for January 1 or possibly before. In advance of reductions that will be necessary on the part of some independents, has come the official announcement of wage adjustments at plants. Those affecting the Pittsburgh district include a flat 20 per cent reduction in labor by the Wheeling Steel Corporation and the Midvale Steel and Ordnance Company with its Cambria plant at Johnstown. Revisions in wages are expected to be announced by the Pittsburgh Steel Company at Monessen and their several sheet mill plants. It is believed that there will be a uniform market on semi-finished and finished products in the opening month of the new year, even to tubular goods, for it is already known that forward tonnage on pipe has been taken by one independent at the official discounts of the leading interest. This tonnage, however, is for delivery in the spring and would not affect current business, which appears generally strong on the matter of values at the lower discounts of the independent market.

With changes imminent of such a portentious character, market conditions are about as quiet for a great nation as is possible. The activity now is mainly in pipe and steel bars, the latter having revived in inquiries and sales during the past week sufficiently to indicate at least a turn in the tide of trade. In the pipe business a demand from consumers for the minimum price is being met to some extent in current demand. There is, however, such a shortage of pipe of certain sizes that a complete uniformity of price is not regarded as possible except for spring shipments. This is because mills are with few exceptions loaded with orders to keep them fully occupied for the next ninety days.

Structural steel interests derive some measure of satisfaction from figures showing a slight increase in demand during November as compared with the preceding month, but large sellers in New York, with rare exception, agree that the movement remains heavily restricted and that no distinct revival can be expected for three or four months. There are several factors that enter adversely into the situation. Builders are still hampered by tight money and high cost of labor. A leading feature has been the expose of control of such enterprises in New York. The investigation of the Lockwood committee has practically been expanded to embrace many other districts. The committee is supposed to have revealed the fact that the foremost fabricators limited their own sales by refusing to sell structural steel to certain interests dominated by labor unions. Their purpose is alleged to have been a desire to promote the open shop.

Pig iron men say they have nothing good to report about the present market and for that reason they do not care to say anything. Pig iron has been hit as severely if not more so than any other commodity and the extreme deflation of prices in the direction of a $30 market has not alone resulted in heavily curtailed operations and losses to producers but has also brought about an unhealthy market condition. Authorities assert that the consumers will find their "strike" react to affect them adversely since a resumption of buying is likely to find stocks grossly depleted and new output at low ebb.

The furnace interests are not yet satisfied with the coke market, and while it is quite possible to obtain contracts as low as $6 for furnace coke of standard Connellsville quality there is some question as to the stability of that price unless a marked change is made in demand in the immediate future. Not only have merchant furnaces gone out or banked, but steel company blast furnaces are now going down, including two at Midland of the Crucible Steel Company, one at Kittanning of the Carbon Steel Company, one the Clinton Iron & Steel stack in Pittsburgh, and one of the Pittsburgh Steel Company, with a possible blowing out or banking of the other stack of the latter company at Monessen, Pa. All of this tends to a slim market for coke and a consequent softening of prices in operations are to be continued. Pig iron prices are quoted as follows:

No. 2X, Philadelphia	$34.79	
No. 2, Southern, Birmingham	35.00@	$38.00
No. 2, Buffalo	35.00@	36.00
No. 2, Chicago	35.00	
Basic Valley, furnace	31.50@	33.00
Bessemer, Pittsburgh	34.96	

Copper.

One of the most important developments in the copper market was the announcement on Saturday by the American Smelting and Refining Company that it will discontinue on January 1 the marketing of copper produced by the porphyries—the Utah, Ray, Chino and Nevada companies—and the Chili, Braden and Kennecott Copper companies. It was stated that the Guggenheim Brothers will take the direction of sales in hand, which will be under the management of Joseph Clendenin, now vice president in charge of sales for the American Smelting and Refining Company. This announcement was discussed with considerable interest in the trade, and was regarded as significant in reflecting the changing conditions that affect the leading operators. Reading between the lines some observers think the withdrawal by the American Smelting and Refining Company as an agent for the producers indicates the difficulty experienced by many in carrying the large stocks and disposing of these materials in an unwilling market. The large agencies quote the price for copper at 14 cents for spot and nearby deliveries and 14½ cents for first quarter shipment.

Tin.

The market touched the lowest point in years on Tuesday when spot tin was quoted at 32 cents a pound. Sentiment was unfavorable at the end of the week owing to disinterest of buyers and a sharp break in sterling.

Lead and Zinc.

Poor market conditions and sharp decline in London were responsible for depressing influences in the local trades, resulting in a ¼ cent to ½ cent slump in both lead and spelter prices in New York. The former was quoted around 4.70 cents New York and 4.65 cents East St. Louis, the leaders

asking 5 cents, while zinc dropped to 6 cents a pound nominally and 5.60 cents in the West. Business was dull and smaller holders appeared eager to dispose of stocks, but the producers were out of the market at the inside prices.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum (in 50-ton lots)	33 cents per lb.
Antimony (Chinese and Japanese)	7½ cents per lb.
Solder, No. 1	24 cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying	Selling
Copper, heavy	10 to 10¼ cents	11¼ cents
Copper, light	8½ to 9 cents	10 cents
Brass, heavy	5¾ to 6 cents	7 cents
Brass, light	4½ to 5 cents	6 cents
Brass turnings	5¼ to 5½ cents	6½ cents
Lead, heavy	3¼ to 3¾ cents	4¾ cents
Tea lead	2¾ to 3 cents	4 cents
Scrap zinc	3 to 3¼ cents	4¼ cents
Solder joints	6½ to 7½ cents	8½ cents
Mixed babbitt	6 to 7 cents	8 cents
Cocks and faucets	8 to 9 cents	10 cents
Block tin pipe	30 to 31 cents	32 cents
Cast aluminum	10 to 10½ cents	11½ cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying	Selling
Heavy yellow brass	7 to 7½ cents	8½ cents
Brass light	5½ to 6 cents	7 cents
Brass borings	8 to 8½ cents	9½ cents
Brass turnings	6 to 6½ cents	7½ cents
Red brass	10 to 10½ cents	11½ cents
Copper, crucible	10½ to 11 cents	12 cents
Copper, heavy	10 to 10½ cents	11½ cents
Copper light,	9 to 9½ cents	10½ cents
Lead, heavy	3½ to 4 cents	5 cents
Tea lead	2¾ to 3 cents	4 cents
Zinc	2¾ to 3¼ cents	4¼ cents
Solder joints	6½ to 7 cents	8 cents
Cast aluminum	11 to 13 cents	14 cents
Block tin pipe	26 to 28 cents	29 cents
Mixer babbit	5 to 5½ cents	6½ cents

PRICES OF BOILERS AND RADIATION REDUCED.

Chicago, December 22.—Boilers and radiation followed the general price trend in the plumbing and heating material market, and early this week reductions were announced amounting to 7½ per cent on radiation, 5 per cent on wall radiation, and 12½ per cent on boilers, including tank heaters. These reductions it is hoped, will be the means of stimulating business, but in this case, as in others, it will take some time before the information filters through the regular trade channels to architects, builders and the general public, to the point where actual work will get under way. However, the move of reducing prices is one in the right direction, in view of the public attitude as regards the prices of commodities entering into construction. In this connection, also, the question of lower wage scales enters into whatever speculations are being made right now as to the building program in 1921. Labor leaders steadfastly maintain that it is out of the question to consider lower wages before the cost of living shows a substantial reduction. One hears rumors to the effect that a dollar an hour or less will be the scale brought about by supply and demand in the labor field, and this contention has some foundation. With the winter months ahead, there is plenty of time for sane thought on the housing problem and the construction field in general.

PASSING OF PITTSBURGH BASING PLAN PREDICTED.

R. V. Lindabury, general counsel for the United States Steel Corporation, told the Federal Trade Commission, December 6th, that the present rate of growth of steel production in the Chicago district would wipe out the "Pittsburgh base" system of steel prices within five years, by the operation of economic laws. It was the concluding point of his argument against a reopening of the proceedings before the commission, and part of the three days of argument which the steel producers are presenting to the committee in opposition to the plea for the issuance of a complaint against them, made by the Western Association of Rolled Steel Consumers and other fabricators. They failed in their first attempt to obtain such a complaint but later were given a new hearing by the commission. The case is now in the hands of the commission. Should the latter reverse its former finding and determine to issue the complaint, there will still be another year of investigation and hearings before a decision can be made and then a year or so of litigation in the courts before the commission's final decision can be put into effect, says "The Iron Age."

The Opposing Attorneys.

Mr. Lindabury's argument consumed all of the December 6th hearing. Attorney Henry R. Platt for the Inland Steel Co. continued the argument December 7th, giving the position of the independent steel producers who are aligned with the Steel Corporation in this contest. Attorney James Francis Burke spoke for the Pittsburgh Chamber of Commerce, which also is opposing the efforts of the Western and Southern fabricators to obtain the abolition of the "Pittsburgh Base"—or "Pittsburgh Plus" system as they have termed it—by a decree of the Federal Trade Commission. Paul D. Cravath, attorney for the Bethlehem Steel Co., presented the view of Eastern independents, while L. A. Manchester, of the Youngstown Sheet & Tube Co., Frank H. Scott, of the Steel & Tube Co. of America and C. W. Wickersham, for the Lackawanna Steel Co., also were scheduled to oppose the issuance of a complaint. It was expected that the rebuttal would be in the hands of H. G. Pickering, as the chief counsel of the Western Association, and Elliott Cheatham, attorney for the Southern complainants.

Since the hearing some weeks ago, Victor Murdock had retired from the presidency of the commission and Huston Thompson sat in his place at the head of the table. Commissioner Murdock, however, continued to take an active part in the proceedings, as did Commissioners Gaskill and Pollard, the fifth seat at the commission table still being vacant. None of their questions, however, indicated whether any of them had changed their views since Commissioners Murdock and Gaskill voted against the issuance of a complaint and Commissioners Thompson and Pollard favored its issue.

Question of Jurisdiction.

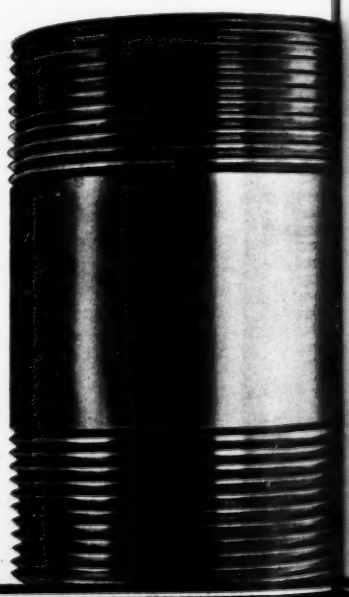
Attorney Lindabury renewed his contention that the Federal Trade Commission could not take jurisdiction in the case unless it was convinced that the Pittsburgh base price was either the result of an agreement in restraint of competition covered by the Clayton act, or an act of unfair competition under the Federal Trade Commission law.

"If you assume," he said, "all that the complainants claim with regard to this proceeding, if you assume that it is so uneconomical that you are forced to believe that it is the result of an agreement and that the condition complained of exists under an agreement—which it does not—you can not control it unless it is the product of unfair trading. It may offend against every other law in the United States, but unless it is accompanied by 'unfair methods of competition,' you have no jurisdiction.

(Continued on Page 640.)

FRETZ NIPPLES—

HIGH GRADE NIPPLES
FRETZ
FROM BRAND NEW PIPE



EVERY FRETZ NIPPLE IS A

Mention DOMESTIC ENGI[illegible]n writi

WE WOULD like to conduct you, personally, through our plants and let you observe each detail of the production of FRETZ NIPPLES.

You would note, for instance, that we use nothing but clean new pipe—there isn't a foot of scrap or crop-end pipe on the premises.

You would note, also, that after cutting off required lengths of a certain size pipe it goes to the threading machines. Here the first nipple threaded is inspected and gauged by the factory superintendent. The slightest imperfection of thread causes that machine to be stopped and the die head carefully inspected.

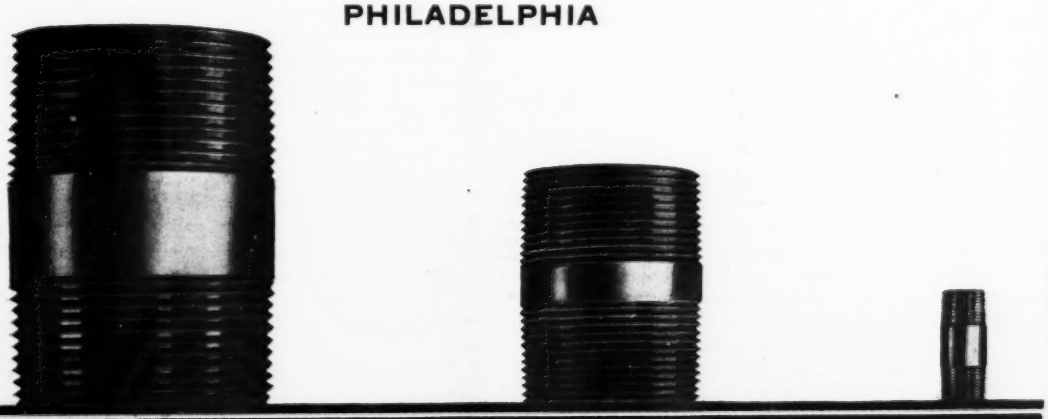
FRETZ NIPPLES are for the better kind of work. They are made for the man who figures conscientiously on every one of his jobs.

In other words—Use NEW NIPPLES where NEW NIPPLES should be used, and always specify FRETZ NIPPLES.

Sizes 1/8 in. to 12 in. inclusive.

S. S. FRETZ, JR. & CO.

PHILADELPHIA



ADE FROM NEW PIPE

AMONG THE WHOLESALERS AND MANVFACTVRERS

COMPANIES RECENTLY INCORPORATED.

The Noles Water Filter Co., Jacksonville, Fla., has been incorporated in that city with a capital of $50,000 by J. H. Braden, T. R. Miller and G. V. Buffington, to manufacture water filters and equipment.

The Shoppe Flush Valve Co., 10 Railroad Place, Newark, N. J., has been organized in that city to manufacture flush valves and specialties. F. L. Shoppe, Passaic, and Edward G. Hedges, Newark, are at the head of the new company.

The Rogers Faucet Co., Bridgeport, Conn., recently organized, has made arrangements for the manufacture of water faucets. John Rogers is president and treasurer, and Charles W. Fotch is secretary and manager of the company.

The Mount Vernon Furnace & Mfg. Co., Belleville, Ill., has been incorporated with a capital of $75,000 by Carl Schweinfurth, Arthur St. C. Ward, and C. T. Mullen. The company will manufacture heaters and furnaces.

The Bayonne Guarantee Radiator & Metal Co., 712 Broadway, Bayonne, N. J., has been organized to manufacture radiators, boilers, etc. George Katzman is at the head of this enterprise.

The Thomas Bros. Co., Florence, S. C., has been organized in that city by W. E. Thomas and H. H. Heard, to manufacture gas burners and heating specialties.

The Rite Wa Oil Heating Co., Inc., of Quincy, Mass., has just been incorporated with a capital of $500,000, to manufacture oil heating devices. The incorporators are: Loren R. Churchill, Adelbert R. Balcom, Gilman A. Dorr, Adolph S. Sandberg, George A. Wardwell, Joseph A. Keating and Albert H. Hall, all of Quincy.

DECLARE QUARTERLY DIVIDENDS.

The Ohio Brass Co., Mansfield, Ohio, has declared a quarterly dividend of 1½ per cent on its preferred stock, payable January 15th to stock record of December 31st.

The Baltimore Tube Co., Inc., Baltimore, Md., has declared a quarterly dividend of 1¾ per cent n its preferred stock, payable January 1st to stock record of December 20th.

NEW PLANTS AND ADDITIONS.

The Standard Sanitary Mfg. Co., Pittsburgh, Pa., has had plans completed for the construction of an addition to its factory building on West Main Street in Louisville, La.

Crane Co., Chicago, is having plans prepared for the erection of a two-story building on East Third Street, Los Angeles, Cal., The building will be 80x100 ft.

The Republic Boiler & Radiator Co., Baltimore, Md., recently incorporated with a capital of $1,000,000, is soon to construct a factory building. Several sites in the eastern part of the city are under consideration. Enos S. Stockbridge, E. McClure Rouzer and William Lentz head the company.

The Milwaukee Reliance Boiler Works, Milwaukee, Wis., has awarded contracts for the erection of a two-story brick and mill shop, ell-shaped, 100 x 125 ft., to cost about $50,000. A number of additions have been erected by the company this year, and with the present project the improvements will involve an investment of about $150,000. John E. Sharp is president of the company.

CHAMBER OF COMMERCE OF THE UNITED STATES TO GRAPPLE WITH THE HOUSING PROBLEM.

Measures looking to an improvement of the housing situation throughout the country will be taken up at a meeting of the National Council of the Chamber of Commerce of the United States to be held in Washington, January 27 and 28, 1921.

The Council is made up of one representative of each of the 1,400 organizations having membership in the Chamber. Its functions are to act in an advisory capacity to the Chamber's Board of Directors.

The housing problem is considered of such importance at this time that most of the sessions of the conference will be devoted to the subject. It is hoped the meetings will bring forth a constructive program. Besides members of the Council, presidents and secretaries of all organizations which are in the Chamber have been invited to attend the housing sessions. These invitations are extended in view of the fact that most organizations have been brought face to face with the housing situation in one form or another.

Other questions will come before the Council. A nominating committee will be named to suggest candidates for membership on the Board of Directors. Terms of eighteen members of the board will expire at the next annual meeting of the Chamber in the spring. Questions having to do with the Chamber's machinery of operation will be discussed.

The subject of housing will be approached by the conference from three directions.

The social and civic effects of a shortage of housing.

Building industry phases, including the effect of a stagnation of building on business conditions.

Industrial housing, i. e., the housing of employes by industrial establishments.

A program for the conference will be prepared by a committee of three men, R. G. Rhett, of Charleston, S. C., representing the civic and social side; Ernest T. Trigg, of Philadelphia, for the construction industry, and a member yet to be named, for industrial housing. The committee is assisted by John Ihlder, newly named head of the Chamber's Civic Development Department, who has given much study to the subject.

Mr. Ihlder sees in the housing shortage a serious handicap to a full revival of business. The present slack season, he believes, offers an opportunity for thinking out a sound, constructive policy.

"To most business men," says Mr. Ihlder, "housing is in the nature of a new undertaking, one to which they have not given much thought in the past. For a generation or more business men have let housing take care of itself. But action is now demanded. Matters can not drift. Not only will lack of houses prove a serious handicap to the revival of business, but

hasty, poorly planned and poorly executed construction—inevitable if sound policies are not worked out before construction begins—will take a constant tax from business through its waste and ineffectiveness, as well as through the sure increase of sickness, discontent and inefficiency that always accompany poor housing.

"The city that has adequate housing will have a tremendous industrial and commercial advantage over less well equipped rivals. The industrial nation that provides good housing for its working population will have the edge on competitor nations. England realizes this so clearly that the national government has committed itself to a house building campaign that involves a loss to the National Treasury of $100,000,000 a year for sixty years. Canada, too, has embarked upon an ambitious house building program."

SLOAN VALVE CO.'S NEW PLANT.

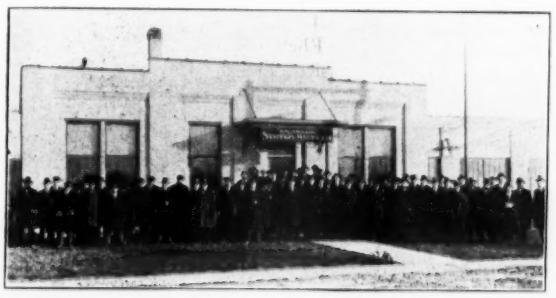
The new plant of the Sloan Valve Co., Chicago, which was recently completed at 4300 West Lake Street, is shown in the accompanying illustration and is one of the most modern brass factories in the country. It has an area of 40,000 sq. ft. and is laid out for continuous operation. In other words, raw materials, after being tested, leave the foundry and progress in

The New Plant of the Sloan Valve Co., in Chicago.

one direction through the various departments until the shipping room is reached. The plant is fitted with the latest foundry, molding, plating and machine shop equipment, enabling the company to produce a high quality product in quick time. Particular attention has also been paid to the comfort of employes, and facilities of every character are provided in this up-to-date factory.

DELEGATION OF MASTER PLUMBERS VISITS PLANT OF KALAMAZOO SANITARY MFG. CO.

Seventy-five master plumbers from Kalamazoo, Grand Rapids, Holland, Muskegon and Muskegon Heights, Mich., were guests of the Kalamazoo Sanitary Mfg. Co., Kalamazoo, Mich.,



Delegation of Master Plumbers at the Plant of the Kalamazoo Sanitary Mfg. Co., in Kalamazoo, Mich.

on Wednesday, December 8th, through an invitation extended to the Richards Mfg. Co., of Grand Rapids, and the Bond Supply Co., of Kalamazoo. A special car was chartered which brought the party from Grand Rapids, and on arrival in Kalamazoo a luncheon was served at the Park-American Hotel. Talks were made by Glenn Richards, of the Richards Mfg. Co., and William Brownell, a Kalamazoo advertising man, who was introduced by E. V. Brigham, vice-president and general manager of the Kalamazoo Sanitary Mfg. Co. After luncheon, 15 automobiles took the party to the plant, where Gordon Gavin, superintendent, and J. R. Evans, secretary, took charge of the guests on a trip through the plant to see how sanitary earthenware is made. Three hours were spent at the factory and much interest was manifested in the various processes of manufacture.

BUILDS BRASS GOODS PLANT IN CLEVELAND.

The accompanying illustration shows the modern factory recently completed by the Pioneer Alloy Products Co., of Cleveland, Ohio, which will be devoted to manufacturing particularly a self-drain stop and waste cock of the compression type. The officers of the company are: William H. Smith, president and general manager; F. E. Cook, vice-president; W. E. Daly, sec-

The New Plant of the Pioneer Alloy Products Co., in Cleveland, Ohio.

retary and treasurer. William H. Smith, president and general manager of the company, was formerly secretary, treasurer and general manager of the Cleveland Brass Mfg. Co., and was associated with that organization for 14 years. The plant of the new company is located at 16601-16611 Euclid Avenue.

PROPOSED FEDERAL TAX REVISION.

Subject of Referendum Vote of the Membership of the Chamber of Commerce of the United States.

A proposed program of federal tax revision, suggesting radical changes in present methods of levy, was put to a referendum vote of the membership of the Chamber of Commerce of the United States on Monday, December 20th. The proposals come from the Chamber's Committee on Taxation, which makes its final report after nearly a year's study of the subject. In sending the proposals out to a vote the Chamber's Board of Directors makes it clear that the board itself neither approves the report nor dissents from it. The sole purpose of the referendum is to obtain the opinion of the country's business organizations and not to get approval of the recommendations voiced in the report.

Only the vote of the member organizations can commit the National Chamber for or against any proposition. Meanwhile, the report and its conclusions rest solely upon the authority of the committee that signs it.

The different propositions upon which the Chamber's members are being asked to express their views are:

"I.—The excess-profits tax should be repealed.

"II.—Revenues now derived from the excess-profits tax should be obtained mainly from taxes on incomes.

"III.—There should also be excise taxes upon some articles of wide use, but not of first necessity.

"IV.—Should a sales tax be levied instead of the taxes mentioned in proposals II and III above?

"V.—Should a sales tax be levied in addition to such taxes as are mentioned in propositions II and III above?

"VI.—Members voting in favor of question IV or V above are asked to indicate below the type of sales tax they advocate:

(a) A General Turnover Tax.
(b) A Limited Turnover Tax.
(c) A Retail Sales Tax.

"VII.—There should be a moderate and graduated undistributed earnings tax on corporations.

"VIII.—Each individual stockholder of a corporation should pay his own normal tax.

"IX.—Income from any new issues of securities which may lawfully be made subject to federal tax should be taxable.

"X.—American citizens resident abroad should be exempt from the American tax upon income derived abroad and not remitted to the United States.

"XI.—Profits arising from sale of capital assets should be allocated over the period in which earned and taxed at the rates for the several years in the period.

"XII—An exchange of property of a like or similar nature should be considered merely as a replacement.

"XIII.—Net losses and inventory losses in any taxable year should cause redetermination of taxes on income of the preceding year.

"XIV.—Ascertainment by the government of any tax based on income should precede payment.

"XV.—Administration of income taxation should be decentralized."

The proposition with regard to the sales tax is included in those to be voted on, despite the judgment of the committee that such a tax is impracticable, because of the wide interest in proposals that have come from a number of quarters for a tax of this nature.

The committee makes it plain that in its opinion the government's expenses will remain high for some time to come. With this in mind it sets forth that the revision it proposes is not aimed at reducing the amount of yield, but in changing the manner of levying important taxes.

"Frank recognition of the situation," the committee says, "brings realization that the country must continue for several years to bear a heavy burden of taxation."

Strict economy by the government and on the part of the people is urged. The government, says the committee, must use the proceeds of taxes only for purposes which are essential, reducing the billions of floating debt and abolishing annual deficits in the treasury. "This is no time," the report declares, "for diversion of the receipts from heavy taxes, gladly assumed in patriotic support of war, to new undertakings of doubtful public benefit."

The committee, in putting forth its recommendations, goes into each proposition in some detail. For the benefit of organizations asked to consider the report the referendum pamphlets accompanying the ballot cites at length negative arguments on each proposal advanced by the committee. This gives those voting the opportunity to study considerations for and against each proposition.

Taking up first the committee's statement that taxation must remain high the negative argument declares this to be a matter of judgment based on the government's financial situation and that opinions may differ. It points out that the government has certain realizable assets, including merchant vessels, and that it might not be necessary to retire its outstanding securities as rapidly as is contemplated.

Members of the committee signing the taxation report, except as they dissent on the points indicated are:

R. G. Rhett, president People's National Bank, Charleston, S. C., chairman.

Arthur Andersen, Arthur Andersen & Co., Chicago.

R. G. Elliott, Jaques Manufacturing Co., Chicago.

John H. Gray, Carleton College, Northfield, Minn.

Fred R. Fairchild, Yale University, New Haven, Conn.

J. Laurence Laughlin, professor Emeritus of Political Economy, University of Chicago.

Thomas B. Stearns, Stearns Roger Manufacturing Co., Denver, Colo.

Hamilton Stewart, vice-president, Harbison-Walker Refractories Co., Pittsburgh, Pa.

Ernest W. Stix, president, Rice-Stix Dry Goods Co., St. Louis, Mo.

NEW CONSTRUCTION WORK.

The following are among the most important contracts recently awarded as reported by the "American Contractor":

$3,000,000 plant, Bridgeton, N. J.; Cumberland Glass Co.

$3,000,000 hotel, theater and Arcade building, Akron, O.; Akron Prospect.

$3,000,000 power house, New York City; United Electric Light & Power Co.

$450,000 arcade, theater and office building, Akron, O.; Waldorf Theater.

$380,000 school, Buffalo, N. Y.; City of Buffalo Board of Education.

$310,000 school, Lansing, Mich.; Board of Education.

$300,000 factory and power plant, Maplewood, Mo.; Martl Investment Co.

$230,000 plant, Philadelphia, Pa.; American Ice Co.

$201,000 hotel and dormitories, Bridgeman, Mich.; New First Congregational Church.

$200,000 office building, Clinton, Iowa; Curtis Co.

$200,000 Y. M. C. A. building, Sioux City, S. D.; Y. C. A.

$200,000 refinery, Chanute, Kans.; McWhorter Chanute Refining Co.

$200,000 school, Norwalk, O.; St. Paul's Catholic Church.

$175,000 shop, LaFayette, Ind.; Monon Route.

$150,000 building, Yorkville, O.; Wheeling Steel & Iron Co.

$135,000 school, Washington, D. C.; District of Columbia.

$125,000 bank and office building, Cleveland O.; the State Banking & Trust Co.

$125,000 church, parish house and rectory, Richmond, Va.; Church of Holy Comforter.

$125,000 plant, Granville, Wis.; T. J. Mossa Tie Co.

$100,000 school, Grand Rapids, Mich.; Board of Education.

$100,000 church, Pontiac, Mich.; First Presbyterian Church.

$1,100,000 bridge, Yankton, S. D.; Meridian Highway Bridge Co.

$500,000 hospital, Kansas City, Mo.; St. Luke's Hospital Association.

$300,000 factory, Amarillo, Texas; Advance Rumley Co., LaPorte, Ind.

$200,000 school, Shawnee, Okla.; Board of Education.

$200,000 office building, Topeka, Kans.; Southwestern Bell Telephone Co.

$100,000 bank and office building, Amboy, Ill.; First National Bank.

$200,000. Factory Building, Cumberland, Md. The American Cellulose & Chemical Co.

$200,000. Restaurant and Office Building, West Toronto, Canada. Childs Company.

$152,000. School, Trenton, N. J. St. Mary's Greek Catholic Church.

$127,000. Court House, Petersburg, Ind. Board of County Commissioners.

$125,000. Bank, Indianapolis, Ind. Bankers' Trust Co.

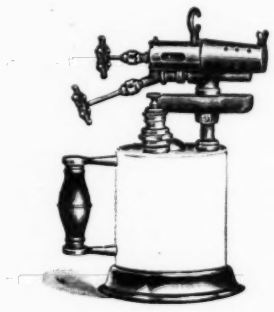
SHOP EFFICIENCY BIGGER BUSINESS

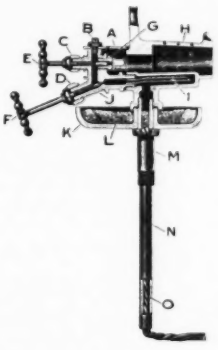
NEW EQUIPMENT AND IMPROVEMENTS

SELLING OPPORTUNITIES REPLACEMENT WORK

Improved Gasoline-Kerosene Torch.

Burning low grades of gasoline or kerosene at a high degree of efficiency is accomplished in the improved double-needle burner torch shown in the accompanying illustrations. The burner is of substantial construction with an improved generator involving the latest ideas in fuel combustion. Two needles control the supply of fuel which enters the combustion chamber and enables the user to regulate the size, and quality of flame. The upper needle cleans the orifice and cannot enlarge it, and the lower needle is a blunt-point, shut-off needle, so that the burner cannot be damaged. The tank is made of heavy-gauge, seamless-drawn brass reinforced, with an automatic brass pump. Torches with the double-needle feature are made in three sizes; pint, quart and two quart capacity, both with and without hook and support on the burner for holding a soldering copper.





TRADE LITERATURE

Kewanee Water Heaters and Garbage Burners.

Catalog No. 75 of the Kewanee Boiler Co., Kewanee, Ill., offers the plumbing and heating contractor complete information about water heating garbage burners, water heaters and tanks, as well as steel storage and pneumatic pressure tanks, air receivers, gravel basins and blow-off receivers. The catalog has 32 pages, with a stiff cover. The water heaters have capacities from 130 to 700 gals. per hour. The garbage burning contracts awarded in that company's territory—states east ranging from 200 to 2,000 gals. The catalog is profusely illustrated and complete specifications accompany each section.

Information About Slate.

A fund of interesting information about slate is contained in two bulletins on data and standards issued by the Structural Slate Co., Pen Argyl, Pa., and compiled by the Structural Service Bureau of Philadelphia. Chapter 1 has eight illustrated pages devoted to commercial gradings and standard finishes. Chapter 2, which has 12 pages, takes into consideration slate for closet, shower bath and urinal enclosures, and pages 7 and 8 give specifications which will interest the plumbing contractor.

Wolff Range Boilers and Plumbers' Brass Goods.

Two illustrated bulletins have just been issued by the Wolff Mfg. Co., Chicago, one covering range boilers and the other plumbers' brass goods. The former has eight pages showing horizontal and vertical boilers and expansion tanks, sizes, capacities and prices accompanying each model. The brass goods bulletin is the first to be issued and will shortly be followed by a catalog that is now in the making. The bulletin illustrates compression bibbs, fuller bibbs, stop and waste cocks, etc., and a discount sheet is attached to the bulletin.

"The Business Philosophy of Moses Irons."

Daniel Louis Hanson, now associated with the National Trade Extension Bureau and who has spent a lifetime in the plumbing and heating field, has contributed a notable work to the business literature of America in the book which has been published under the above title by the A. W. Shaw Co., Chicago. The book is dedicated to the late Captain James B. Clow of Chicago, and inasmuch as Mr. Hanson was long associated with the Clow organization, one sees in Moses Irons a reincarnation of one of the biggest men known to the plumbing and heating industry. In "The Business Philosophy of Moses Irons" are characters whom you have met in real life—up and-doing competitors, good salesmen and bad; business-building executives and, head and shoulders above them all. Moses Irons, humorist, satirist, strategist, and withal a man whose business philosophy is akin to that of every square dealing and successful man of affairs. Sound business philosophy, intensely interesting characters, complex business situations, battles of wits with Moses Irons, both as winner and loser—this briefly is "The Business Philosophy of Moses Irons." It is a book that should be read by every sales manager and salesman in the plumbing and heating field.

Twenty Years Ago in "Domestic Engineering"

December 29, 1900.

S. P. Fisher, for the past ten years, W. J. Schoenberger, for seven years, and E. Rickersberg, for five years connected with the Glauber Brass Mfg. Co., Cleveland, have associated themselves with C. A. Stone and C. A. Stone, Jr., under the firm name of the United States Brass Mfg. Co., to manufacture plumbers' brass goods.

Crane Company has placed themselves squarely among the ranks of those who believe that contented workmen make a better showing for the year's work than does the declaration of an extra large dividend. The sum of $100,000 will be distributed among their 3,000 employes on New Year's day, on the basis of 5 per cent on their yearly income.

The event of the week in plumbing supply circles is the transfer by purchase of the Walcott-Webster Mfg. Co., of Chicago, to the firm of James B. Clow & Sons. The works will continue under the direct supervision of W. M. Webster, formerly president of the Walcott-Webster Mfg. Co. Mr. Webster was formerly an office boy for Rundle & Spence, of Milwaukee, subsequently joining the L. Wolff Co. and the J. L. Mott Iron Works, returning in 1891 to the Rundle-Spence Mfg. Co. as general manager. In the same year he went into business for himself with Edward C. Smith.

L. C. Gibboney, for several years engaged in the manufacture of radiators at Elwood, Ind., and Bucyrus, Ohio, has accepted the position of assistant superintendent of the United States Heater Co. of Detroit.

Gas fitters in Chicago returned to work on December 19th, after being locked out for more than 10 months, and a 3 years' agreement has been signed. The master plumbers were represented by M. J. Corboy, C. C. Breyer, C. J. Herbert and A. W. Wills.

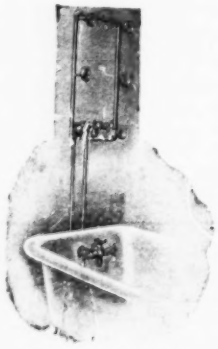
Enter the Slogan Contest. See Page 24.

Up-to-date Merchandise

Jones the Plumber wrote Bill

Dear Bill:

Study the new things, especially the advertised ones in our field. Get this, your customers are reading the advertising too.



Therefore, when next you install a recessed or built in tub mention the Congress Model Kenney Shower. It renders a service that will make friends for you; and will show your customers that you're up to date. Better display one in your window.

Yours,

J. J.

Write for Kenney Shower Sales Plans. They are in keeping with the Trade Extension idea. Over a thousand merchant plumbers are now making extra profits through the aid of these plans.

THE CURTAINLESS SHOWER COMPANY
507 FIFTH AVENUE - - NEW YORK

Illinois

Chicago and Vicinity.

Noble & Thumm, 2313 Lincoln Avenue, have the contract to install plumbing in the $275,000 two-story church and Sunday school building that is to be erected for the North Shore Baptist Church at the corner of Lakewood and Berwyn Avenues.

Jones & Jacoby, 426 Plymouth Court, will install the plumbing system in the $40,000, one-story factory building being erected for the Narowetz Heating & Ventilating Co. at 1711-1717 Park Avenue.

E. C. Wagner, 2753 West Fullerton, has the contract to remodel the plumbing system in the old building, and to install plumbing in a new addition to the bakery building of the Littler Pie Co. at 113-119 Ann Street.

Johnson Bros. Heating Co., 1419 Belle Plaine Avenue, has the heating contract on the two-story residence being erected in Hubbard Woods, Ill., for John Davies.

Edward C. Oakes, 3634 Fullerton Avenue, and P. H. Callahan, 185 North LaSalle Street, are to install the plumbing and heating systems, respectively, in the $45,000 salesroom and service station under construction at 5033 Broadway for Harold L. Dahl.

Architect A. G. Lund, 449 West Sixty-third Street, is revising plans for a three-story, ninety apartment building that is to be erected on Yates Avenue, between 73rd and 74th Streets, at a cost of $250,000.

Architects Holabird & Roche, 104 South Michigan Avenue, have completed plans for a sixteen-story side addition to the Hotel Morrison, Madison and Clark Streets. The addition will have 600 rooms and a theater seating 1,400. The cost of the structure is estimated at $2,000,000.

Architect A. F. Hussander is to prepare plans for additions to the Crane High School at Leavitt and Van Buren Streets, and the Schurz High School, Milwaukee Avenue and Addison Street. The Crane addition will cost about $3,000,000, and the Schurz, $1,350,000.

Architect Z. T. Davis, 64 East Van Buren Street, is to prepare plans for a $500,000 orphanage building that is to be erected for the Building Commissioner of Will and Brundy Counties, Joliet, Ill. The orphanage will be known as the Mundelein Institute.

Architect U. G. Uffendel, 39 South State Street, has completed plans for a $135,000 three-story sales and display building that is to be erected for V. Mueller at 646 South Wood Street.

Plans for a one-story factory building to cost $35,000 have recently been completed by Architect A. G. Lund, 449 West Sixty-third Street. The building is to be erected at 5116 South State Street for the Chicago Window & Door Screen Co.

Revised plans have been drawn for the $250,000, one-story synagogue that is to be erected for the Anshe Sholem congregation at Homan Avenue and Douglas Boulevard. The building will be 100x125 ft. and will seat 1,600.

Architects Z. T. and C. G. Davis, 64 East Van Buren Street, have completed plans for a $200,000 church, seating 500, for the Holy Cross Catholic church in Champaign, Ill. The foundation is being poured, but the rest of the structure will not be erected until in the early spring.

Architect J. N. Coleman, 6357 St. Lawrence Avenue, has drawn plans for a $50,000 one-story grade school and gymnasium to be erected in West Chicago for the Board of Education of that district. Bids for separate contracts will be taken soon.

Architect Meyer J. Sturm, 116 South Michigan Avenue, is drawing plans for a $250,000, three-story community memorial hospital to be erected in Geneva, Ill., for the Fox River Valley Community. The hospital will have space for 75 beds.

Canton, Ohio.—Heating and plumbing contracts for the $30,000 garage being erected by the Sanitary Milk Co. have been awarded to Rechkemmer Bros., Second Street, S. W.

Norwalk, Ohio.—Hoffman Wolfe, Columbus, will install the plumbing and heating work in the $200,000 school and garage being erected here by the St. Paul Catholic Church.

New York

New York City Master Plumbers Indicted Under Donnelly State Anti-Trust Law.

New York, N. Y., Dec. 21.—Fifty-two New York City master plumbers, twenty-seven of them corporations, and twenty-five individuals, all of them subscribers to the "Code of Practice" of Lawyer John T. Hettrick, have been indicted on the charge of violating the Donnelly State Anti-Trust Law. Hettrick, himself, has also been indicted, this being the second time such action has been taken against him within the past week. The details of the blanket indictment returned against the accused plumbers have not yet been made public. All of the defendants had given testimony before the Lockwood Investigation Committee regarding their relations with Hettrick. Six of the indicted men have already been arraigned in court, and, after pleading not guilty, were released on five thousand dollars bail.

An indication of the line of defense the accused master plumbers will probably take was given earlier this week, when a group of heating contractors appeared voluntarily before the Board of Estimate's hearing on public school contracts, and explained their relations with Hettrick.

Their motive in subscribing to the Hettrick Code, they declared, was not a desire to obtain any advantages of collusive bidding, but was prompted solely by a desire to obtain the necessary labor to enable them to carry on their work. It had been suggested to them, they said, that the lawyer might help them materially in the labor situation.

George N. Mahaney, of Terrain, Mahaney and Monroe, who are low bidders on the heating contract for School 79, Brooklyn, yet to be awarded, and who bid unsuccessfully on two other school contracts, during the past year, gave testimony at the Board of Estimate hearing which furnished new light on Hettrick's methods.

Competitors had advised him that Hettrick could get him labor, Mr. Mahaney said, and therefore he went to see the lawyer.

"Hettrick told me that we would have to pay him an initiation fee of $250, and one per cent of the contract price on all contracts awarded to us," the witness testified. "In addition, he had to have a record of all bids, and the bid had to be approved as to its correctness before we submitted it to any concern. He didn't say how many clients he had whom he was going to check it up with, or anything of that kind."

"I asked him if he didn't think that arrangement was crooked," Mr. Mahaney continued, "and he said that he had talked it over with a representative of the Department of Justice, who went all over the thing and said it was legal."

"It didn't look straight to me, but when he told me that he had had the stone men for four years, and the plumbers for six years, and that it was checked over with a representative of the United States Department of Justice, I came to the conclusion that it must be all right."

Mr. Mahaney said that he had finally decided, however, not to go into the plan, and that his firm had never had any trouble with the labor unions on account of failure to inform Hettrick of bids.

Another group of Hettrick's "clients"—the cut stone contractors—thirty of whom were indicted last week, have all pleaded guilty and, on their promise to aid the Lockwood Committee in its work, have been let off with fines of $5,000 each.

The leniency extended to these men by the court, on the recommendation of Mr. Untermeyer, has caused a clash among the members of the Lockwood Committee, Senator Abraham Kaplan, one of the committee, having registered a protest that the cut stone contractors should have received a maximum jail sentence instead of being fined.

Senator Kaplan attempted to have the committee by a formal vote to bind Mr. Untermeyer to insist on a maximum jail sentence for all persons convicted as a result of the investigation, but, after the committee had gone into executive session, this motion was defeated, and the committee has voted to let its counsel use his own judgment in dealing with men under indictment.

Mr. Untermeyer, in defending himself against the insinuations of Mr. Kaplan, intimated that he had recommended leniency for the cut stone men because they were in a position to help him land certain "much bigger fish."

Whether counsel for the Lockwood Committee contem-

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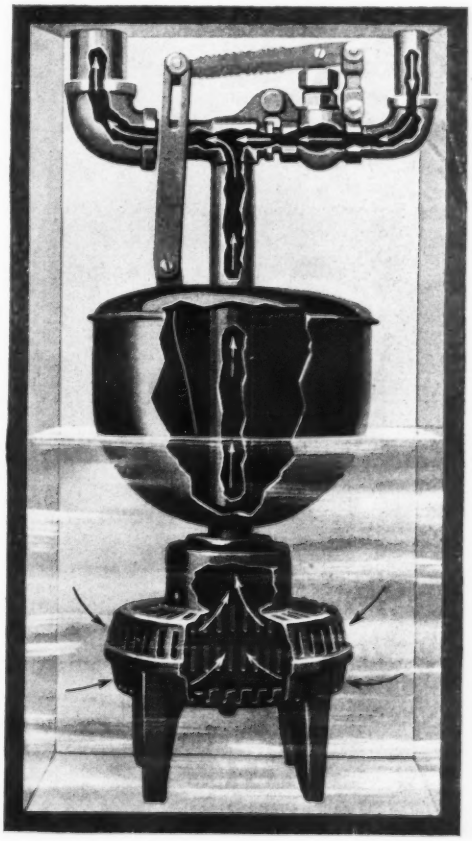

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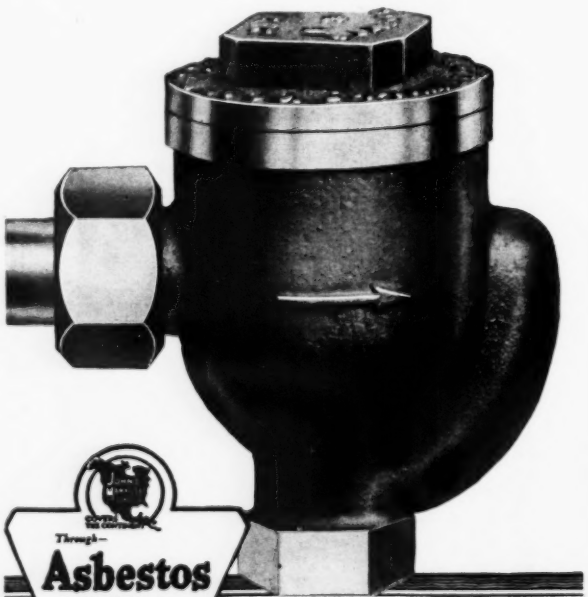

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plates a similar attitude of leniency toward those of Hettrick's "clients" who are members of the plumbing and heating trade, is a question still to be answered.

Most of the sessions of the Lockwood Committee, during the past week, were taken up with an investigation into the structural steel situation in New York, it being brought out by the testimony of several contractors that the steel interests have been trying to force the "open shop" on employers of labor in the New York building trades by refusing to deliver structural steel to any concern which would not agree to operate under the open shop policy.

Representatives of some of the most prominent construction concerns in the country testified that the tremendous burdens added to the cost of building during the last year were due to the policy of the United States Steel Corporation, the Bethlehem Steel Corporation, and other large steel fabricators, which refused to continue their old practice of selling structural steel direct to builders, forcing them to have the work done by the Iron League Erectors' Association.

The "open shop" policy, according to these witnesses was really a move to bar out union labor, men with union cards being placed on the black-list. Up to the time the new policy was adopted they declared, steel was erected by union men efficiently, while present conditions have imposed a burden of from 25 to 35 per cent on the cost of building construction.

As an incidental discovery the testimony given before the committee threw light on the manner in which Robert P. Brindell, of the Building Trades Council benefited by the open shop war of the steel fabricators. Since the Iron League refused to permit steel to be put up except under open shop conditions, Brindell was able to threaten strikes on the charge that non-union men were doing the steel work. In this way he levied tribute on builders for permission to have the steel work continue to go up under open shop conditions.

Mr. Untermeyer has charged that the attitude of the steel interests was not inspired by a desire for genuine open shop conditions, which would make no discrimination between union and non-union labor, but was merely a masked attempt to drive union labor entirely out of the building trades. Counsel for the Lockwod Committee that the organized methods pursued by the great steel companies in their attempt to dictate to the building trades savors strongly of "conspiracy in restraint of trade," and he has announced his intention of turning over to the state and federal authorities the testimony along these lines brought out at the committee's hearings.

Great interest is being shown in the announcement by United States Senator Calder that he is contemplating following up the preliminary work of the Lockwood Committee by asking the Senate to extend the powers of his own committee so as to enable him to conduct a nation-wide investigation of alleged conspiracies of building material supply men and manufacturers, and of members of organized labor. It is believed, here, that a national inquiry along the lines of the Lockwood probe would go a long way toward stimulating building construction next spring. Moreover, the men in the local building trades believe that New York is being unjustly discriminated against by being placed in the limelight by the Lockwood probe, when an investigation of other cities, they declare, would reveal conditions equally as startling.

Samuel Untermeyer has been sounded on his willingness to act for the Calder Committee, and it is reported that he will accept the offer, and undertake the national investigation as soon as his work with the Lockwood Committee is completed. The latter will keep him busy until the middle of January, and he has announced his intention of completing that work before he turns to any other activities.

New York City.

H. Segel, 304 East 100th Street, New York City, is installing the plumbing and heating in structures located at 186 West 102 Street, 912 Ninth Avenue, 470 Eighth Avenue, 230-232 East Tenth Street, 232 East Fifty-fourth Street, and at 285 Grand Street.

Mount Vernon.

A. H. Karl, 447 East Third Street, Mount Vernon, is completing the plumbing and heating in thirteen residences for the Rungstead Construction Co. in Pelham Wood, fifteen houses for H. S. Houpt in Pelham Heights, and is installing plumbing and heating in the Gargani Hotel at 21 North Fourth Avenue, Mount Vernon.

Utica and Vicinity.

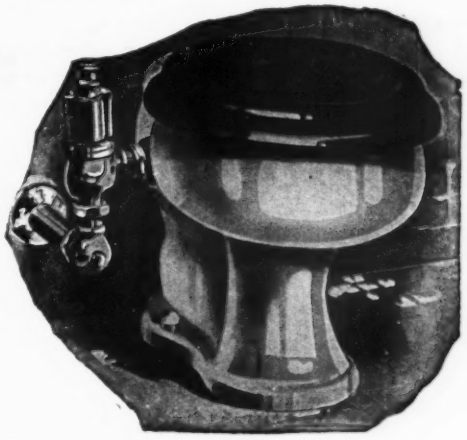
The members of the Master Plumbers' Association of Utica and their friends among the jobbers and manufacturers of plumbing and heating goods, in that city and vicinity, held another well-attended meeting for the study of Trade Extension in the Chamber of Commerce Building, Utica, on Monday evening December 13th. Professor Russel Morehouse, principal of the high school at Clinton. N. Y., was again the main speaker, and his theme was "Co-operation." His interesting address follows herewith in part:

"It has been well said that 'in unity there is strength', that 'united we stand, divided we fall' and that 'two heads are better than one'. These well-known adages sound the key note of our discussion this evening, for they express but one and the same thought viz., that organization and co-operation are synonymous terms. They point out in a very vivid fashion that this association of plumbing and heating contractors, can accomplish as a unit what is absolutely impossible to accomplish individually. The assertion of one of you that a change of any kind is needed will receive scant, if any, consideration. The same claim discussed in an organized body and then presented with the names of those who unqualifiedly support it stirs the public and private conscience to sober reflection, insures thoughtful and far reaching discussion, and nine times out of ten means some decisive action, and respond to the appeal. No business concern, however affluent and flourishing today, can hold aloof, can be sufficient unto itself, can be complacently satisfied with its policy of isolation and self aggression'. History presents no more striking instance of this policy of self-efficiency and self-satisfaction than in very recent years when a nation, contented with its idea of a hermit-like existence and employing tactics which we might appropriately call 'unfair competition' will place the matter in its true light. All fair in the world's history. Efficiency then in this instance became in the eyes of the civilized world sufficiency, because it was simon-pure selfishness. Above all nations is humanity; above every store is humane consideration of fellow men.

"Two facts stand out clearly in organization work. One is the possibilities of co-operation and usually the first question a man wants to have satisfactorily settled in his own mind is, 'what can I make out of my organization?' instead of asking 'what can I give to this organization?' The second proposition is our responsibilities. Too many of us are prone to look eagerly for the first and to neglect to assume the latter. We are too keen to grasp the advantages which bring material gain to ourselves but are reluctant to shoulder the responsibilities. If you are to thrive and prosper as a business concern, if you are to thrive and prosper as a craft, you must put your shoulders together to the wheels of the organized body, for the prosperity and success of the individual plumbing and heating contractor is inseparably linked with the prosperous and successful conduct of this organization.

"Among the evils which confront you the greatest of all is 'unfair competition'. This evil practice has many angles and is a fit subject for intelligent discussion under the

Geo. Herth, Manager; H. C. Stevens, T. McDermott, Floyd Miller and C. B. Wynne, all of the New York Branch of the Standard Sanitary Mfg. Co., Pittsburgh, Pa.—From "Domestic Engineering" Photo.



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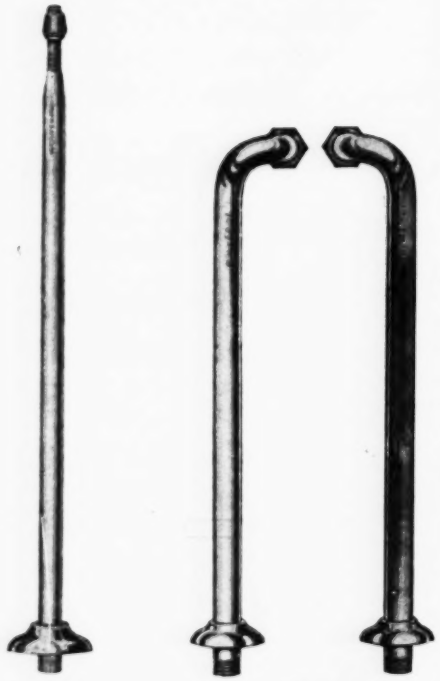

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regular order of business. Discussing the facts of unfair competition will place the matter in its true light. All fair-minded men will admit that any one is justly entitled to original costs and a fair profit and any attempt to reduce prices below a fair and reasonable profit is unfair in their methods and should be met by reasonable argument, publicity and education. Education along lines of fair competition must begin with your members through the instrumentality of this organization which has no axe to grind and which has only the best interest of the entire craft at heart. Conclusive facts of unfair competition should be reported to the meeting of the craft and fully investigated and discussed so that a remedy may be found.

"The entire subject of fixed charges of operating cost is one of almost complete mystery to the average citizen. You cannot expect the public to have a clear and correct concept of this item of expense on every bill when the members of your own craft do not thoroughly understand its practical application. And you do not understand it, the public does not understand it because no course in arithmetic in our public grammar schools has incorporated any mention of it in its text books. No grammar school graduate of today or in fact of yesterday—and only relatively a small percentage even go higher—has any idea of its righteous presence in every item of sale of every merchant. The teaching of arithmetic, then, presents a serious defect—a defect which costs you many an hour of heated argument, and arguments with customers ofttimes means loss of customers and loss of customers means loss of deserved revenue.

"I firmly believe that the plumbing and heating contractor has a duty to his fellow man, and that duty is to go to him and point out those things in the plumbing line which he so sorely needs for his own well-being, for the well-being of his own children and the children of every home in his neighborhood and in the majority of cases which he could afford to have. And when a plumber is doing this, he is performing a public service and should be rewarded, at least, by courteous treatment.

"A committee was appointed last week to make the public health movement effective. I would like to see the plumbing and heating craft represented on this committee. I would like to see you take steps to lend support along practical lines, for the movement is doomed ultimately to failure unless the root of uncleanliness, viz., the unsanitary plumbing and heating of the home, is removed. Such an action on your part would sound the clarion call that the keynote of the organization always has been and always will be—Service. Service from the individual and the community to the individual and the community—that ideal business service the 'big brother' idea—one helping the other—neither philanthropy nor charity nor selfishness because you give and they receive. It would furnish convincing evidence that this organization fosters civic pride and betterment and lends unqualified support to every endeavor for a greater and better New York State—a better place to work in, to live in and to play in—for all.

"What is the answer to that query: 'What will I make out of the organization?' One hundred per cent more than you can ever put in for you can contribute but one unit but you share in the work of a hundred."

New Jersey

Joseph Greber, 12 East Broadway, Hackensack, is installing plumbing and heating systems in the residence of Thomas Parker on Simmons Avenue, and the plumbing in two residences, and he has recently completed the installation of plumbing two other residences in that city.

W. P. Steuernagel, 122 Elm Street, Westfield, has the contracts to install plumbing and heating in four residences for J. O. Clark, and the boiler in the plant of the Barret Roofing Co.

William Rita, 15 Westfield Avenue, East, Roselle Park, will install plumbing and heating systems in six residences that are to be erected in that city.

H. L. Wahl, 725 North Avenue, Westfield, has the plumbing and heating contracts on four new residences in that city, and the heating contract on one.

J. H. Dederick, 321 Elizabeth Avenue, Elizabeth, has been awarded the contract to remodel the plumbing and heating systems in the moving picture theater building on Fourth Street and Elizabeth Avenue, in Elizabeth.

Florida

The South Florida Farm Co. will spend $50,000 for new homes in the Moore Haven section of the Everglades.

Residences and bungalows are being erected in rapid fashion in Sarasota. J. W. Madison, a contractor of that city, recently erected the town's best bungalow in thirty days, and immediately started the erection of four more.

Building permits issued in Orlando for the month of November totalled $212,308. An addition to the Presbyterian church in Orlando is now under construction.

Contracts for the erection of $150,000 worth of residences have recently been awarded in the city of Fort Myers.

The cost of homes erected in Winter Park up to November 1st amounted to $115,000. The demand for dwellings has not yet been met.

A camp capable of housing 150 people is being erected in Gainesville. The erection of this camp will relieve somewhat the serious house shortage existing there. Plumbers are being kept busy installing plumbing in the structure.

The contract for the erection of a $300,000 hotel in West Haven has recently been awarded by the Great Food Producing Corporation, of Atlanta, Ga.

Eight homes are being erected in Lake City. The cost of the buildings is estimated at $70,000.

Permits for buildings issued in St. Petersburg for November amounted to $190,650. A new toy factory is being erected in that city.

November permits for Miami totaled $325,000. This brings the total for the year up to $3,963,800.

A $75,000 church is to be erected in Tampa, and a $15,000 church in Okeechobee.

A court house to cost $109,000 is to erected in Panama City. The new structure will replace the one recently destroyed by fire.

Cleveland.

The annual meeting of the Heating and Piping Contractors' Cleveland Association, was held at the organization headquarters, The Arcade, Monday evening, December 13th, and the banquet that followed, at Hotel Hollenden in the evening. While the principal business of the event was to elect officers and have a good time, much valuable information was submitted by speakers, with the result that a good many of the suggestions offered may be acted upon definitely at future regular meetings. Outstanding features of the gathering were suggestions by leaders in the trade for closer amicable relations between contractors and labor; proper education of apprentices with a view toward turning out better journeymen, and careful consideration of costs by members, that business may progress on a sane basis through the period of readjustment and thereafter.

The officers elected were: President, Walter Klie, the Smith & Oby Co., and president of the Building Trades Employers' Association; vice-president, F. M. Daugherty, the Grinnell Co.; secretary, M. L. Crowell, the Crowell & Smith Co.; treasurer, A. E. Welker, the Price & Welker Co.; executive committee, Ed Maurer, the Maurer Bros. Co.; W. B. Van Sickle, the W. B. Van Sickle Co.; delegate to Building Trades Employers' Association, W. B. Van Sickle; alternate; F. M. Daugherty.

At the dinner meeting Ed Maurer was toastmaster. The feature of this part of the meeting was the presentation of a loving cup to Mr. Van Sickle, retiring president, which was quite the surprise to him as his associates intended it to be. This mark of appreciation was for the work he has done for the organization, its members and the trade in general for the last six years. Mr. Van Sickle was a pioneer in organization work, and one of the leaders in getting the present association started. He has since been prominently identified with both state and national organization of the heating and piping trade.

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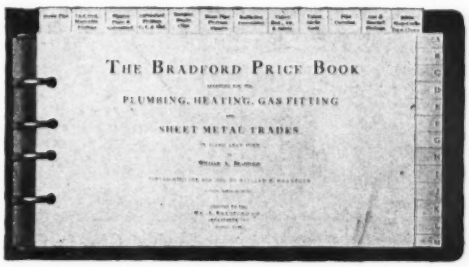

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Fig. C

Fig. D

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Fig. E

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NEWARK NEW JERSEY

In pointing out future activities for the organization to follow, a comprehensive system of costs was urged by Mr. Van Sickle. It is his contention that because many contractors have graduated out of the journeyman class, they may be expert in the mechanical phase of their work, but not posted on good business methods. He urged that a good cost-finding system, such as the one prepared by the National Trade Extension Bureau be installed by all members. He also urged the adoption of a good apprentice system, whereby apprentices may learn the practical side of the business through a schooling that will teach him the operation of equipment, the reading of plans and other features. Mr. Van Sickle also advocated the adoption of the plan of one apprentice to two journeymen, on the ground that this will make for the maximum efficiency for both journeymen and apprentices, as well as keep costs down for both contractor and consumer.

President Walter Klie advocated caution in consideration of the open shop movement by members of the building industry, claiming that while evidence shows it to be a good thing, it is unwise to jump at conclusions upon evidence alone. He also urged the promotion of the cost accounting program, and pointed out the good results already obtained by the heating and piping interests, among the first in the construction industry to take such action. Development of this form of education among members in the business will aid as much as anything else to stabilize business at this time, he said, because from now on the real test of business ability will be required of all in business. Sound business policies, said Mr. Klie, will avoid too high or too low overhead costs for one thing, as, with such factors to contend with, the contractor can do the community quite as much harm by making his costs to the builder too low, as if he insisted upon excessive profits from a high cost.

Agreements between contractor and journeymen, as entered into between the Building Trades Employers' Association and the Building Trades Council, are a good thing for both employers and employes as well as the public, if they are the right kind of agreements, Mr. Klie claims.

The meeting was marked with the presence of many representatives from the labor faction, indicative of closer relations between capital and labor. One of the speakers from the labor group was James Malley, of the Building Trades Council. Others who spoke were: George Mehring, of Chicago, in Cleveland on committee work for the National Association; George Donley, president of the Builders Exchange, and E. A. Roberts, secretary of the same body; W. F. Hennessy, secretary of the Building Trades Employers' Association; Robert Mayer, of Mayer & Valentine, and also of the Board of Education Engineering Department, and Supervisor of Cutodian Kissick, for the Board of Education.

The smoker and entertainment, the first of its kind, but not the last, was held at Elk's Hall. There were plenty of smokes, athletic matches, singing and a general good time. Al Schnitzer and his associates on the entertainment committee, planned the event and deserve credit for their good work.

Massachusetts

Salem and Vicinity.

So well pleased were the members of the Massachusetts North Shore Association of Master Plumbers with the work of their officers during the past year that at the annual meeting at Salem on Friday evening, December 10th, all were re-elected. President Bernard J. Driscoll and Vice-President A. M. Hawkes thus are given a second and third term, respectively, while the secretary and treasurer, James H. Trow and John F. Cabeen, respectively will add another year to their already long periods of service. Directors elected were: President Driscoll, Secretary Trow, Elwood Noyes, Reuben E. Dockham and John P. Shaughnessey. The meeting was well attended with members present from Salem, Beverly, Peabody, Manchester, Hamilton and other North Shore communities. The reports of the officers showed a successful year with the organization in a flourishing condition. By vote of the meeting a message of congratulation was sent to William A. Bradford, of Quincy, on his election to the office of mayor, Mr. Bradford having many friends in the North Shore organizations. Arrangements were made for an early beginning by the association of a course on Trade Extension. Refreshments were served at the close of the meeting.

John J. Mullen, a master plumber and an ex-mayor, was unsuccessful in his contest for the office of mayor of Everett at the annual city election on December 14th.

Percy T. Strout, salesman for the Magee Furnace Co., who sought election to the school board in his home city of Woburn, also failed in his attempt to break into politics this year.

Haverhill and Vicinity.

The ruling of the city solicitor of Haverhill that the proposed public comfort station in that city may not legally be built on Washington Square Park has not discouraged the proponents of the station project. Some are in favor of seeking a new location for the comfort station while others have suggested that an appeal be made to the legislature to so amend the law that the station may be constructed in the park. The ruling of the city solicitor is interesting in that many cities and towns already have placed public convenience stations in parks while others have such plans under consideration. After quoting the law regarding the class of buildings which may be erected in public parks, the city solicitor said:

"It is the purpose of the law relating to public parks * * * that they shall remain open, natural, free, healthful and unpolluted. They must be kept free of all things offensive to the senses. They should afford pleasure to the eye and give opportunity for open air enjoyment. Anything which detracts from their beauty and most pleasing enjoyment is subversive of their legal use. * * *

"The most that can be said in favor of a sanitary station is that it is a convenience. It is unpleasant in suggestion, appearance and effect because of the use that will necessarily be made of it. Common experience teaches us that such places are not regarded as sacred by those who frequent them, and only by the most vigilant and painstaking care and supervision can they be saved from becoming public nuisances. * * * The thing to bear in mind is that the parks are in a way a combination of the health and educational departments of our government and as such must be kept free from disfigurements and encroachments which detract from their beauty or usefulness.

"In my opinion therefore you cannot legally locate a sanitary station in Washington Square Park."

An order has been introduced in the city council of New Bedford calling upon the city property committee to "give consideration to the matter of immediate construction of a comfort station to be erected in the center of the city."

Waltham.

Elimination of all fees for plumbing, building and other inspections under the city regulations, has been decided upon by a committee of the Waltham city government which is considering a revision of the city ordinances. It has been found that in 90 per cent of the cases the inspection fee, which it was intended should be paid by the workman, has been charged against the property owners and tax payers. Under the regulations proposed there would be no charge for the first inspection of work, but where a reinspection is necessary because of failure to comply with requirements, a nominal charge will be made.

Other Cities in the State.

The Jennison Co., of Springfield, has the contract for installing plumbing, heating and sprinkler systems in a public garage being erected at Gardner for Nelson E. Frizzell, at a cost of $20,000.

The contract for heating and plumbing in connection with changes to a house at Dedham, to be used as a club house for the American Legion Post, has been given to D. F. Maher of that town.

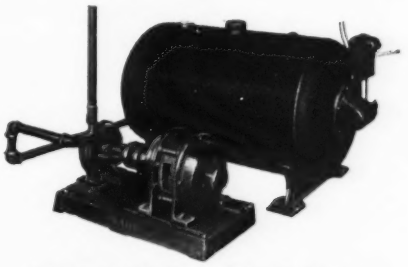
Tucker & Rice, of 165 Commercial Street, Worcester, will do the plumbing in an addition to a manufacturing building on Grove Street, Worcester, for Ella H. Foye.

Connecticut

Howard F. Bryant, recently elected to the board of aldermen in his home city of Bridgeport, is a well known master plumber and is very popular among his colleagues. In a recent article giving the business record of the members of the board a Bridgeport newspaper had this to say of Alderman Bryant:

"A plumber with full knowledge of his trade is Howard F. Bryant. He knows all about plumbing, for he's a boss plumber now and has been through the ropes. One of the more interesting physical aspects of Bryant is his dimple which deepens

SERVICE



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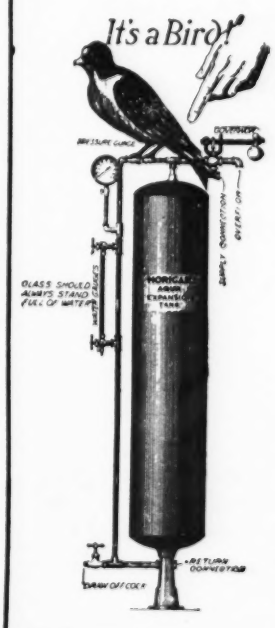

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Run by electricity, boys This FORBES' can be used anywhere you can lay a wire

You know how handy it is to have your pipe cutting and threading machine **right on the job,** where you can get at it without having to lug your pipe all over the plant.

That's just one reason why this FORBES' Pipe Threading and Cutting Machine is so popular. It is run by a small electric motor, and can be used anywhere you can lay a wire. It threads and cuts pipe accurately and at high speed. And if necessary it can be worked by hand.

FORBES' are made in sizes to cut and thread any pipe from one-quarter to fifteen inches—and more. They can be provided for hand, belt or motor drive, and with or without cast iron base, as required. Write, telling us your pipe size requirements, and we'll suggest the type of FORBES' best fitted to your needs.

CURTIS & CURTIS CO.
318 Garden St., Bridgeport, Conn., U. S. A.

FOREIGN AGENCIES:

Anderson, Meyer & Co., Ltd., of China, Shanghai, China; Horne Company, Ltd., Tokyo, Japan; Aktiebolaget Sigfr. Anderson & Co., Malmo, Goteborg, Scandinavia and Stockholm, Sweden.

FORBES'
IT THREADS PIPE ACCURATELY

2036-K

as he smiles, which is most of the time. His political career may dim the dimp, for the office is new to Bryant, and he is just about to cut his aldermanic teeth. Bryant is married and has a perfect disposition according to his friends."

The town of Ellington at a recent special town meeting authorized the trustees of the Hall Memorial Library to have a new heating plant installed in the library building.

Washington

Dr. T. Tharaldsen, sanitary officer of the Loyal Legion of Loggers and Lumbermen, who has been making a sanitary inspection and survey of the logging and lumber camps of the Pacific Coast reports that there has been a marked improvement in the sanitation in the Pacific Northwest. He reports that not only has there been no tendency to slip back since the relaxation from military control but there has been a rapid advancement along sanitary lines. He reports that the logging camps are now practically all provided with shower baths, that kitchens, mess halls and toilets are fly-proof, sanitary drinking cups are being installed, and hot and cold water are being generally provided. Reports received from seventy large operators indicate improvements as follows: Two hundred and twenty-four shower baths have been installed by twenty-nine companies; nineteen camps have installed sanitary flush toilets, thirty-seven have installed new earth vault toilets with fly-proof vaults, 24 club rooms and recreation halls have been provided 158 sanitary drinking fountains have been installed by twenty-nine operators, and other improvements are being made right along.

Oregon

Plans for the proposed Benson Hotel near Portland have now been completed, and work on the foundation is now well under way. The building will be three stories high and will cost about $200,000. The building will be built in two sections. The first section will contain forty-eight rooms in addition to parlors, dining rooms, etc. The first floor will contain in addition to a suite of living rooms the parlors, dining room, kitchen, etc. Each of the upper floors will contain twenty-one sleeping rooms, each with a private bathroom. The second section, which will be started after the completion of the first, will give the hotel a total of 100 sleeping rooms. The hotel will have a frontage of 300 ft.

California

San Francisco and Vicinity.

Good progress is being made on the construction work already under way in San Francisco and other California cities. No new contracts of importance have been let this week and nothing of great importance is to be expected until after the first of the year, and probably there will be very little doing before the middle of February when the worst of the rainy season will be over.

Unless the unexpected happens, building work in this section should be very active throughout the coming spring and summer. In the cities there is a great demand for both business space and dwelling houses. Rents are very high and the scarcity in houses is becoming more and more acute all the time. While there has been a good deal of newspaper talk about a prospective drop in the prices of materials and labor, it does not appear that the present lull in building is due to any great extent to a desire to await reductions. The falling off seems to be the regular winter dull season.

The financial outlook for San Francisco and California is reassuring rather than otherwise, according to J. B. McCargar, president of the California State Bankers' Association. Mr. McCargar says that here as elsewhere we are going through a period of adjustment and that the situa-

tion is being met in a very satisfactory manner. He says that the outlook for 1921 is fairly steady and that the spring of next year will see a healthy increase in building activity, which should continue throughout the summer, as it will take some time to catch up with the housing requirements. While there may be some little unemployment during the present winter, he does not expect this to become serious here. He does not expect wages to be cut appreciably in the west, and feels that all that is necessary is to have a fairly steady market for materials and labor. As California had less of the war expansion, so it has had less of a drop by the cessation of war activities than some other states, and Mr. McCargar finds that this is now making itself felt.

Other Cities in the State.

Bids have been called for for the construction of a two-story brick jail at Pomona. Separate bids will be received for the plumbing and heating.

Contracts were awarded last week for the construction of the new seven-room Stege school at Richmond. Charles Doell was awarded the contract for the plumbing on his bid of $3,085, The heating and ventilating contract was awarded to J. J. Collins for $7,761. It is planned to have the work completed by the early spring.

Bids have been called for for the construction of the new Piedmont high school building at Oakland. Separate bids will be received for the plumbing, heating and wiring.

Plans for the new Y. M. C. A. building, gymnasium and athletic field at Long Beach, have been completed and will be ready for figuring in a short time. The total cost is placed at $144,000.

W. E. Gilmour, formerly in the plumbing and heating business at Alhambra and San Diego, has opened in the same lines at Monrovia.

NEW DWELLINGS TAX EXEMPT FOR FIVE YEARS IN NEW JERSEY.

The first state to endeavor to pass some legislation in the aid of new building construction is New Jersey. This state recognized that the best method of overcoming the housing shortage was plenty of new construction. Therefore they are exempting new buildings constructed between October 1, 1920, and October 1, 1922, from taxation for a period of five years, or until October 1, 1925. The full text of the measure is as follows:

"Whereas, the cessation of building during the great war has created a shortage of dwelling houses throughout the state, and congested housing conditions resulting therefrom have seriously affected and endangered the public welfare, health and morals; and,

"Whereas, on account of the high costs of construction growing out of the great war and conditions resulting therefrom, private capital has been unwilling to undertake the construction of dwelling houses sufficient to meet the public emergency caused by such conditions; and,

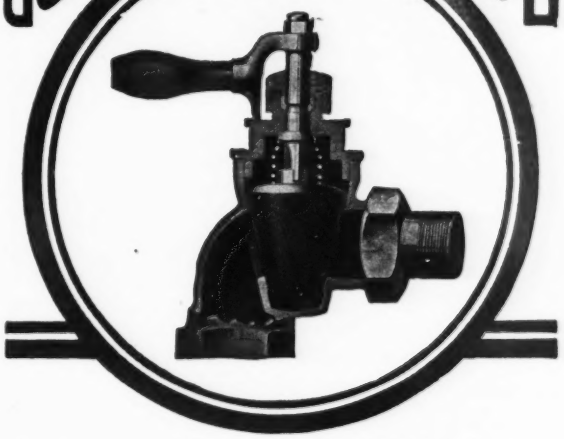
"Whereas, it is deemed necessary to encourage the investment of private capital in the construction of dwelling houses during such emergency; and,

"Whereas, the measure hereinbefore set forth, by its terms and provisions, will not in any way reduce the amount of returns receivable from present ratables throughout the state, and will eventually result in a greatly increased volume of ratables; Therefore be it enacted by the Senate and General Assembly of the State of New Jersey:

"1. No taxes shall be levied, assessed or collected for a period of five years from October first, nineteen hundred and twenty, on any improvements to real estate which may be erected between October first, nineteen hundred and twenty and October first, nineteen hundred and twenty-two. If, during said five years, improvements for dwelling purposes greater in value than the existing improvements shall be placed upon any real estate, the amount of assessments on such improvements shall in no case, except that of damage through action of the elements, sufficient to warrant a reduction, be less than the assessment for improvement thereon existing at the date of the passage of this act.

"2. This act shall take effect immediately."

GORTON QUARTER TURN VALVE



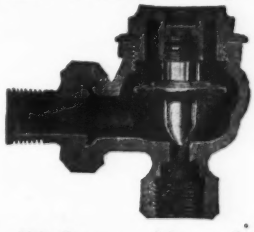
A Quarter Turn of the Wrist Opens or Closes this Valve

A Packing Lock Stem, with Ground Shoulder seating in bonnet insures a Tight Valve that Stays Tight. Send for Catalogue showing why.

GORTON & LIDGERWOOD COMPANY
94 LIBERTY STREET, NEW YORK, N. Y.
Fisher Building, Chicago, Illinois

Marsh Reflux Junior Thermostatic Traps

For Radiators and Coils of "Low Pressure" "Vapor" and "Vacuum" Heating Systems



Freely Discharges Air and Water Without Loss of Steam

The Marsh REFLUX Return Line Trap is for use on the return end of radiators of low pressure, vapor and vacuum systems of heating. It is the result of a careful investigation into the actual requirements that must be fulfilled by a radiator return valve, in order that it may accomplish what is desired of it, namely, **to free the radiator of air and water without the loss of steam** and to do so **noiselessly.**

The Marsh Reflux Junior Thermostatic Trap is recommended for small radiators and coils. This Trap for the small and the Original Reflux for the large units will make an ideal job.

Especially adaptable for two pipe gravity work and vapor systems.

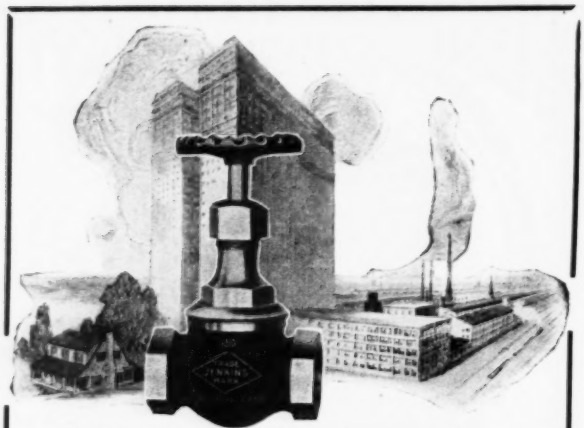
May be furnished either concealed adjustment (as illustrated) or with outside adjustment.

Write for literature fully describing this trap.

JAS. P. MARSH & CO.

Established 1865 118-124 South Clinton St., CHICAGO

Manufacturers of Gauges for all Pressures and Purposes
Automatic Air Valves and Steam Specialties



Jenkins are big factors in good plumbing

The design of Jenkins Valves results from a thorough understanding of valves and valve requirements. They are heavier than other valves because more metal is put into them.
A Jenkins Valve is dependable and "trouble-free" under every condition, because each valve in every type is made for maximum service, not merely the average—and so tested before it leaves the factory.
Jenkins Valves are made of brass, iron, and steel in types and sizes to meet all requirements of power plant, plumbing, and heating service. They are known by the name and Jenkins "Diamond Mark" cast on the body.

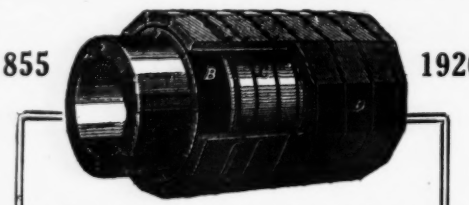
JENKINS BROS.

New York Chicago Philadelphia Washington
St. Louis Boston San Francisco Pittsburgh
Montreal London Havana

2233-J

Jenkins Valves
SINCE 1864

1855 1920



A—2 in. Thick Inner Shell C—¼ in. Dead Air Space
B—Asphaltum Packing D—1 in. Thick Outer Shell

The Dead Air Space Gives Perfect Insulation

Wyckoff's Improved Cypress Steam Pipe Covering has a ¼" dead air space between the two cypress shells, giving it a total thickness of 3¼ inches.
Cypress defies decay—is not affected by soil conditions, water or steam or the alternate wet and dry, hot and cold conditions always found in steam conduits. Each shell is wound under high tension with extra heavy steel wire. Coated with Montezuma Asphalt—the best water proofing known—and rolled in sawdust.

A. WYCKOFF & SON CO., Elmira, N. Y.

Atlanta, Ga.—H. H. White, 1503 4th Nat'l Bank Bldg.
Pittsburgh, Pa.—Johnson-Peter Co., Pittsburgh Terminal Warehouse
Scranton, Pa.—Valley Supply Co., Coal Exchange Bldg.

Canada

PROVINCE OF ONTARIO.

Ottawa.

The plumbing and heating trade locally has entered upon the dullest period of the year, and pronounced inactivity is reported generally. What little work there is, is entirely repairs to heating systems etc., and in a number of cases it has been found necessary to lay off help. This situation arises too despite the fact that building operations this Fall have been favored with unusually open weather. Builders, however, are, as a whole, deferring operations in the hope of lower prices in the Spring. On the other hand there is a growing demand that the Dominion, Province and city unite in starting public works—housing particularly in order to supply employment during the winter for the rapidly growing ranks of the unemployed.

THE PROVINCE OF QUEBEC.

Montreal.

Business is still moving briskly in the city and district. Here and there one hears a hint that a little more work could be handled without overstrain, but in general, between cleaning up existing contracts, and keeping abreast of the seasonable jobbing work, everyone is comfortably busy.

Domestic Sanitary and Heating Engineers of Toronto, Montreal and Westmount, and Some of Their Friends of the Supply Fraternity.—From "Domestic Engineering" Photo.

J. Tweddle has secured the contract for the plumbing and steam heating of the new $400,000 protestant school at Maisonneuve. The contract amounts to $70,000. The heating contract on the pavilions at St. Agathe, in connection with the Soldiers' Re-establishment sanitarium, and the plumbing contract on the new machine shops of the St. Maurice Paper Works have also been secured by this concern. Mr. Tweddle also has the plumbing contract on the Riordan Pulp & Paper Mills, Hawkesburg, and the plumbing and heating contracts on the Westmount Methodist Sunday School.

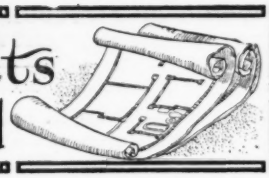
W. G. Bailey, W. G. Edge, and John Burns & Co., all report plenty of work on hand, which is true throughout practically the whole industry in Montreal.

Lakewood, Ohio.—L. Fetterman, Eighty-sixth and Clark Avenue, Cleveland, will install the plumbing in five two-family residences being erected on Clifton Boulevard and Granger by the Fournier Building Co.

Cincinnati, Ohio.—The Edward M. Black Plumbing Co., 123 East Twelfth Street, will install the plumbing in the $20,000 addition to the St. Mary's Hospital, Betts & Linn Streets.

New Castle, Pa.—Barnes & Clark are to install the heating and plumbing in the $400,000 three-story cafeteria and laboratory building being erected in Butler, Pa., for the Standard Steel Car Co.

Contracts Awarded



Littleton, N. H.—Richardson & Cameron are remodeling the plumbing in the Masonic Temple.

New York, N. Y.—Eugene Ducklauer, 221 East Forty-eighth Street, is remodeling the plumbing in the apartment building at 24 Sutton Place.

Manchester, Conn.—Simon Johnson has the contract to install the plumbing in 16 houses—one and two-family—being erected by Cheney Bros.

New York, N. Y.—S. H. Sweeney, 213 East Forty-fourth Street, is remodeling the heating equipment in the hospital at 153 East Sixty-second Street.

Boston, Mass.—J. J. Vogel, Washington Street, Roslindale, Boston, will install both plumbing and heating work in the $7,000 home being erected by Mrs. Ada Dufflis.

Brookline, Mass.—Percy Winters, Carlton Road, Belmont, Mass., will install the plumbing and heating work in the $15,000 residence to be erected by Mrs. M. E. McKenna.

Hanover, N. H.—The plumbing and heating contract for the new $40,000 club house to be built by the Alpha Delta Phi Society has been awarded to T. E. Ward, Hanover.

New Haven, Conn.—Plumbing and heating work in the two-family house and garage to be built at 176-178 Norton Street, will be installed by S. & H. Lyman, 17 Vernon Street.

Hartford, Conn.—Vanderman Bros., 170 Pearl Street, have the contract for heating the new $10,000 residence being built by Philip Mason at Plainfield and Canterbury Streets.

Boston, Mass.—Heating and plumbing in the church being erected in Malden by the First Church of Christ will be installed by William N. McKenna, 79 Chestnut Street, Boston.

Irvington, N. J.—Phillip Becker, 31 Orange Avenue, has the contract to install both plumbing and heating work in the two four-family flats being erected on Grace Street by the Lionel Corporation.

Newark, N. J.—A. E. Saxon, 1049 Hunterdon Street, has the contract to remodel the plumbing and heating systems in the store and office and flat building on the corner of Clinton Avenue and Bergen Street.

Baltimore, Md.—Heating work in the $200,000 office building, being erected by the United States Fidelity & Guarantee Co., will be installed by the Enterprise Steam & Hot Water Heating Co., 600 North Howard Street.

Orange, Conn.—Plumbing and heating equipment in the two $10,000 homes being built by M. S. Anderson, Jr., will be installed by the Thomas Co., West Haven, and Oppenheim & Kacoff, West Haven, respectively.

New York, N. Y.—McQuillen & Chave, 198 Eleventh Avenue, have been awarded the contract to install the heating work in the $78,000 office building being erected at the northeast corner of Varick and Watts Streets.

New York, N. Y.—The William O. Duggen Co., 1431 Boscombe Avenue, has the contract to install the heating apparatus in the $10,000 railroad station being built by the N. Y. W. & B. R. R. at Pine Brook, New Rochelle.

Roxbury, Mass.—The Felton Turner Heating Co., 34 Warren Street, has been awarded the contract to install heating and plumbing work in the apartment building containing five flats at 164-176 Hyde Park Avenue, Jamaica Plain, Mass.

Boston, Mass.—The Ross & Chase Co., 263 Sumner Street, Boston, will install the heating, and J. H. Kennedy & Son, 637 Massachusetts Avenue, Arlington, will install the plumbing, in the $230,000 junior high school now being erected by the city in Arlington.

Patent Applied For

"Burlington" Ball Cock

Closet tanks equipped with the "Burlington" Ball Cock cannot fail to give satisfactory service.

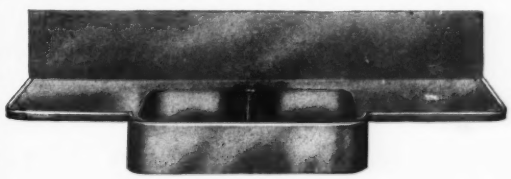
In construction, the "Burlington" is simplicity itself. Nothing to get out of order. Durable. Made of high grade metal by expert workmen.

Elevated or submerged pattern.

Write for descriptive matter of "Burlington" Ball Cocks, Flush Valves and Tank Levers.

Burlington Brass Works

BURLINGTON, WIS.



BADGER

METAL PANTRY SINKS

Made of Badger Metal or best planished copper, they are a quality product. Constructed for any purpose and to fit any space, they will long outlive the memory of their installation cost.

E. B. Badger & Sons Co.

85 Pitts Street, Boston

101 Park Ave. NEW YORK

616 S. Michigan Ave. CHICAGO

Two Kinds of Profit

There is an IMMEDIATE profit—and an ULTIMATE profit and they sometimes differ widely.

You might buy low-grade Tank Balls for 18 or 20 cents each and sell them for 60 or 75 cents and the IMMEDIATE profit would look good, but—when these Balls failed to give your customers good service, the apparent profit would finally prove to be an ULTIMATE loss.

The ULTIMATE profit is the kind made by selling material of standard value at fair prices and thereby holding and gaining customers. Don't lose sight of the ULTIMATE profit—it's the kind which counts most in the end—gained only from the sale of "Quality" goods. For instance,

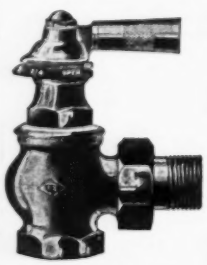
THE PARABAL

"The Standard Tank Ball of America"

Woodward-Wanger Co.

PHILADELPHIA, PA.

Three Systems in One



Heat when you want it, as you want it and where you want it.

The "O-E" Perfect Vapor-Vacuum-Pressure Heating System adapts itself readily to any condition. It is simplicity itself, having fewest possible parts and nothing to get out of adjustment.

Can be handled by any inexperienced person. Noiseless in operation.

Easier to install and gives better, more economical service than steam, water, straight vapor or vacuum systems.

Let us tell you how to convert unsatisfactory steam and hot water jobs into "O-E" "3-in-1" Systems. The expense is nominal as compared with results.

Investigate

O-E Specialty Manufacturing Co.

884 Third Street Milwaukee, Wis. U. S. A.

PASSING OF PITTSBURGH BASING PLAN PREDICTED.

(Continued from Page 621.)

"They ask you to assume that there is a combination of steel producers, and that the prices are the result of a conspiracy between the producers. Mr. Pickering said that there is no competition at all and that there has been none since 1904; that there has been an understanding between the steel manufacturers which resulted not only in the Pittsburgh base system but in a fixation of steel prices in all markets of the country. If such a condition actually existed, they have no right to be here. They should be at the Department of Justice. It is a case for the Department of Justice and not for this commission, because you can't possibly call the establishment of such a result, 'an unfair method of competition.' It is just the reverse. It is a suppression of competition."

Mr. Lindabury then took up the contention that the Pittsburgh base system began with the founding of the Steel Corporation. This he sought to refute by quotations from "The Iron Age" of the year 1892, to show that "Pittsburgh base" prices were quoted in that year. He read to the commission four citations from "The Iron Age" of that year, and followed it with a series of similar quotations for other years. The 1892 citations follow:

February 11, 1892—Chicago. Steel billets are said to have declined considerably in Pittsburgh. If this is true, an important prop to the maintenance of their values has given way. On 20-inch beams 2.50c. Pittsburgh is quoted.

May 19, 1892—Philadelphia. Quotations (for steel billets) made today for May deliveries are for $24.60 Philadelphia, and $24.90 for later dates. Freights from Pittsburgh are down to $2 for the current months, but after June 1 they are to be advanced to $2.30, hence the difference in quotations between May and June.

May 26, 1892—Philadelphia. Steel billets are still weak with sales reported in Eastern Pennsylvania at equivalent to $22, Pittsburgh.

June 9, 1892—Chicago. Billets and rods. Makers are holding firm on these articles. The demand is limited to a few consumers who generally purchase their supply from Western producers at figures based on Pittsburgh prices, freight added.

Result of Economic Law.

Then Attorney Lindabury repeated the contention that the Pittsburgh base system was the result of an economic law, due to the fact that there was a deficiency of steel production in the Chicago district to supply the demand and a surplus in the Pittsburgh district, so that the latter price prevailed.

"It was the operation of that law which induced the Steel Corporation in 1908 to build the Gary plant, for it was able to make from $6 to $7 a ton additional profit on the steel produced there. The same motive prompted the establishment there of the plants of the Inland Steel Co., the Interstate Steel Co., and the Steel & Tube Co. of America. But in those years not a single new plant has been built at Pittsburgh."

To prove the relative deficiency of Chicago's steel production and the excess in Pittsburgh, Mr. Lindabury introduced the accompanying table to show shipments of finished products from Steel Corporation mills to the Chicago district and the shipments from Chicago mills to the Pittsburgh district.

Shipment to Eastern Points.

To explain the shipment of 7 per cent of the Chicago production to Eastern points, Mr. Lindabury declared that these were distributed to:

Consumers of electrical steel, principally manufacturers of automobile parts.

Consumers who have plants also in the Chicago districts whose orders are made up to one company, as a whole, and which it is desirable to execute likewise.

Consumers who require special rolled shapes for special purposes and for which there is a limited market, such as rolled shapes of special form and dimension for vehicles, railroads and street cars and metal sash, and which can be rolled, practically and economically, only when sufficent tonnage is accumulated.

Mr. Lindabury also devoted himself at length to a series of tables of steel production and capacity in Chicago and Pittsburgh, presented by the complainants, and declared that the latter had made comparisons between production and capacity in different years to prove their contention that Chicago's production had been kept down to 40 per cent of its capacity in the efforts of the Steel Corporation to maintain Pittsburgh's supremacy. He insisted that hundreds of millions of dollars had been needlessly put into new plants in the Chicago district by the Steel Corporation as well as the independents, if they did not intend to use them, and then pointed out figures in the complainants' tables which indicated a production as high as 90 per cent in the Chicago district instead of the 40 per cent of capacity claimed by the complainants.

The representative of the Steel Corporation also put into the record long excerpts from the decisions of the United States Supreme and District Courts in the dissolution proceedings, with a claim that these demonstrated that the corporation did not control prices. He declared that these views were binding on the commission in the present case.

"The ultimate question before this commission," declared Mr. Lindabury, "is whether a combination has existed which accounts for these prices. The question is, 'Have these prices been fixed by agreement?' That is what all this leads up to. And on that point, on which you are now asked to reconsider your own decision, you are asked to reverse the decision of the Supreme Court reached after four years of litigation. They have no right to ask you to make that investigation again, or to reopen a case that was conducted by two Attorneys-General of the United States in the most voluminous proceeding ever held in the courts in which it was tried."

A question by Commissioner Murdock brought out Mr. Lindabury's belief that the Pittsburgh base system would disappear by operation of economic laws.

Pittsburgh Basing Doomed

"We have been for a long time on a rising market in which the demand exceeded the supply," declared the commissioner. "Evidently that period is gone. In your opinion, if there comes a time when there is an excess of production everywhere and a diminution of demand, what will be the effect on the steel prices charged? Will they be on a Pittsburgh base?"

"Personally," replied Mr. Lindabury, "I believe the Pittsburgh base price won't last a week under such conditions. The Pittsburgh base will not last five years, anyhow, if it is let alone. I haven't any doubt that with this increase in production at Chicago the law of supply and demand, which is inexorable, will change the whole situation. It has been delayed so far by an inordinate growth in consumption in the Chicago district. Of course, if you can continue to increase the demand in the Chicago district, you can retard the day when the supply overtakes it."

"If a Pittsburgh basing point is a good thing in rolled steel products," again asked Commissioner Murdock, "why not in other items, such as foundry castings?"

"That question rather assumes that these basing points are the results of agreements," replied the lawyer, "that men get together and agree upon them. That is just what we contend they do not do. Pittsburgh base is the result of the condition that arose from the fact that at one time there was no steel mill outside of Pittsburgh. Then they built one at Cleveland, and that mill could charge the Pittsburgh price plus freight to the consumer in its territory. It was not a matter of agreement, but of growth. Take the situation in pig iron.

KILLED

TWO DEAD FROM FUMES OF AUTOS; WOMAN, 82, KILLED

Two men were asphyxiated yesterday by fumes from the exhausts of their automobile engines running in closed garages. Andrew D. Cameron, 225 Woodbine avenue, Wilmette, was found dead by his wife, after he had gone to the garage in the night to drain the radiator. He was manager of the loan department of George M. Foreman & Co., mortgage loan bankers, 11 South La Salle street.

Joseph Schlink, 2736 Seminary avenue, was found by his wife unconscious from fumes in his garage. He died on the way to a hospital.

From Chicago Tribune, 11-13-20

Are you responsible for such conditions existing in your city?

INSTALL DEHN'S PEERLESSS GARAGE DRAINAGE SYSTEM TO AVOID SIMILAR EXPERIENCES

Compound Injector & Specialty Co.

Established 1897

George J. Dehn, S. E., President

Originators, Designers & Sole Manufacturers of

DEHNSANIGARD

419-421 North Laramie Avenue, Chicago, Ill.

The ELECTRO-BOIL

Electric Immersion Heater

is in demand wherever hot water is needed

A simple, safe and effective device that furnishes warm or boiling water the moment it is wanted, at lowest possible cost.

The "Electro-Boil" is made in sizes to meet every heating need—from a small quantity to bathtub full.

Attach to electric socket, turn on switch and place in water until desired temperature is reached. No working parts to break, nothing to repair, will not burn out, and breaks the circuit when removed from water.

Liberal discounts allowed to insure attractive profits. Write today and order a sample of each size. We will mail prepaid, and invoice at the **special dealers' dozen price.**

Milwaukee Manufacturing Co.

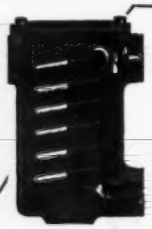
1316 Fond du Lac Avenue

MILWAUKEE, WIS.

"QUIK-OPE"

Bibbs, Bath and Basin Cocks stand the test of Service. It is built into them.

MANUFACTURED BY
THE HAYDENVILLE COMPANY
HAYDENVILLE, MASS.

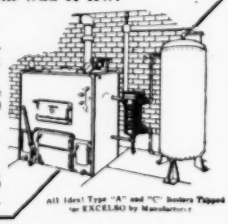


EXCELSO

Meets New Requirements

It means no coils in the fire-box to deaden the fire. It assures an even tank temperature whether the fire burns wild or low.

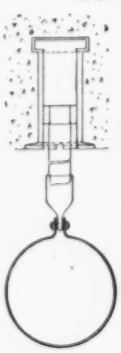
The copper coils easily removable from the Excelso. Can be connected to steam, vapor or hot water boilers; also used for heating with live steam.
Made in five sizes. When used below the water line of steam or vapor boilers, it will heat tanks of from 30 to 120 gal. capacity.
No fitter should overlook this winning proposition. May we send particulars?



All Ideal Type "A" and "C" boilers Tapped for EXCELSO by Manufacturer

EXCELSO SPECIALTY WORKS
119 CLINTON STREET BUFFALO, N. Y.

Instant Vertical Adjustment



Save yourself time and money when running pipe lines in concrete buildings and make a more satisfactory job by using the

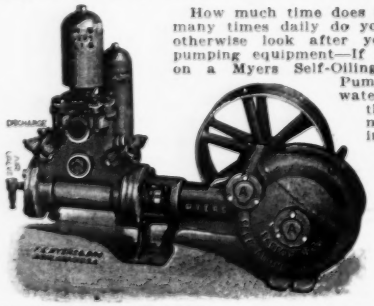
NORJO Adjustable Concrete Insert for Pipe Hangers.

Endorsed by leading engineers and contractors.

Ask your jobber for the NORJO.

Norjo Mfg. Co.
STAR BLDG.
St. Louis, Mo.

Myers Self-Oiling Bulldozer Power Pumps



How much time does it require and how many times daily do you have to oil and otherwise look after your present power pumping equipment—If you are depending on a Myers Self-Oiling Bulldozer Power Pump to pump your water, then we know this overhead is almost entirely eliminated — Many will testify to the remarkable saving in operation costs — the improvement in pumping service — accomplished by this Myers Pump.

Different styles and sizes meet all needs—literature and prices on request.

F. E. MYERS & BRO., Ashland, O.

There has never been any Pittsburgh base in pig iron for the simple reason that Pittsburgh has never dominated the production of pig iron. There is no place in the United States that has ever been able to dominate the production of pig iron."

Mr. Lindabury also introduced a series of tables to show that all the production of the Birmingham district has always been consumed either within that district or sold for export.

Mr. Burke's Argument.

"In this proceeding the Pittsburgh Chamber of Commerce," said Attorney Burke for that organization, "represents in the broadest and truest sense the interests of the public, inasmuch as it includes in its membership a larger number of manufacturing establishments immediately and vitally affected than any other commercial body in America, and because it reflects the views of the business world generally in all matters involving the relationship between business and government in this country.

"We are confronted here by a larger and broader question than one affecting a few corporations directly engaged in a race for trade. Its solution involves consequences far more significant and vital than the immediate success or failures of any number of manufacturers engaged in a single line of commercial activity.

"To apply the remedy which the complainants selfishly invoke would paralyze thousands of industries already established and discourage, if not render impossible, the future development of manufacturing and other competing establishments in American commerce. It would dampen the ardor of industrial initiative, it would put a blight upon the aspirations of every undeveloped community, it would discourage every dollar embarking upon a new enterprise, or seeking investment in a new field where it hoped to reap the rewards of courage and profit by the lack of competition.

"Never was it more essential that this commission preserve the confidence of the nation by strictly observing the legal limitations attached to its powers than at this time when the business world is on the verge of psychological panic, and never was a more wholesome opportunity presented for it to declare with emphasis that it is opposed to the policy of self-enlargement of its authority and the consequent increased encroachment upon private rights such as, in recent years, has invited the criticism of too much government in business and too little business in government.

"No matter how this commission may, by arbitrary ruling, readjust local conditions or give to one set of individuals an advantage over others, by diverting commerce from its natural channels, it cannot violate fundamental principals of trade and avert the natural consequences of ignoring the well established law of commercial intercourse; it cannot substitute an artificial basis of business such as the complainants here seek, without imperiling the whole commercial structure upon which both labor and capital depend in their struggle for local, national and international existence and success."

Philadelphia, Pa.—Charles Powers, 5657 Chew Street, has the plumbing and heating installation contract on the residence at 430 Allen Lane.

Trenton, N. J.—E. H. Carpenter, 19 Centre Street, will install heating and plumbing in the remodeled section of the office building at 221 East Hanover Street.

Sewickley, Pa.—The Sewickley Valley Plumbing & Heating Co. has the contract to install plumbing and heating systems in the two-story bank building on Beaver Road, Sewickley.

Pittsburgh, Pa.—Rose & Blakeley, Beltzhoover Avenue, are to install the plumbing and heating systems in the $12,000 residence to be erected on Murray Avenue and Flemington Street.

Bethlehem, Pa.—H. A. R. Dietrick, 15 West Third Street, was awarded the plumbing and heating contract on the $4,000 one-story store addition at 1 West Third Street.

MOTOR TRANSPORTATION.

Motor transportation now occupies an assured place among American systems for the carriage of freight and passengers, the National Bank of Commerce in New York says in the December number of its magazine, Commerce Monthly. The older transportation systems will eventually adjust their facilities to accommodate the traffic for which they are best adapted, the bank believes, so that the motor truck must bid for business on the basis of efficiency alone. That it will meet this test, the bank declares, there is no doubt.

"Trucks are still carrying a considerable amount of freight which formerly went by rail," says Commerce Monthly, "and it is probable that they will take more of this business in the future; but it is no longer to be feared that the railroads will be injured by this diversion of traffic. As the railroads adapt themselves to the increased post-war traffic, the use of motor trucks will be confined to the field in which their superiority can be demonstrated. Manufacturers who make deliveries by both truck and rail find that beyond a certain limit of distance the advantage of the railroad is decisive. This limit is proportionate to the railway terminal costs of the locality. In a region of very high terminal costs, it has been estimated at about 125 miles. With the exception of shipments of goods for unusually fast delivery it does not pay to ship by truck beyond this distance, when railroad operation is normal. On the other hand, for shipments of 50 miles or less the advantage is all with the truck, except for the heaviest type of loose freight, and the recent railroad rate increases will accentuate this advantage.

"Railroad rates for short hauls are inadequate to meet the high proportionate terminal expense involved. Short haul freight in less than carload lots contributes nothing toward overhead expenses or profit and may even cause serious losses by increasing terminal congestion. Motor truck competition relieves this congestion and ceases to be effective at just about the point where the really profitable railroad business begins.

"Motor trucks are valuable supplements to railroad systems when operating as feeder lines, and in that capacity may replace the expensive light branch lines formerly found necessary to supply main line business from outlying territory. The motor truck operates with success in districts formerly handicapped by inadequate transportation facilities and here performs a valuable service in creating new business. Motor express lines, privately owned and operated as public carriers, radiate from nearly all large metropolitan centers. Through these truck lines the farmer can sell his produce without loss of time and at a minimum of expense, and often is enabled to serve markets heretofore quite out of reach. Such marketing methods appear as the best solution of the difficult problem of supplying great cities with perishable foodstuffs, as it gives the city access to producing areas within a wide radius, many of which enjoy no other means of transportation, or at best slow and expensive facilities which discourage the daily shipment of perishable freight.

"In passenger carriage for public service the motor vehicle encounters the active opposition of electric railways. The outcome is not yet apparent, for the proper division of the field can come about only through free competition, and this unfortunately is not the situation where franchises are granted and rates fixed. The trolley car and the omnibus have distinctive qualities, however, which recommend each for particular types of service. The extent of the use of omnibuses in the United States is indicated by the fact that more than 9,000 are registered in New York City alone.

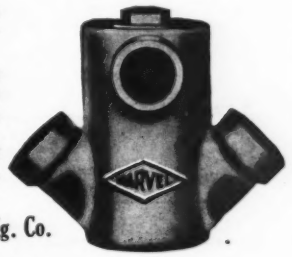
"Farmers are now the largest users of trucks in this country, as they own 10 per cent more than manufacturers and 15 per cent more than retailers. The Department of Agriculture reported that more than 49,000 farmers were using approximately 78,000 motor trucks in 1919. The stockyards of

The Marvel Combination Cast Iron Sink and Laundry Trap

Body 4x7 inches. Made with 1½ and 2-inch outlets.

The MARVEL Line includes a Trap suitable for every bath, sink, laundry, shower, etc.

Write for catalog of complete line or ask your jobber.



Detroit Marvel Brass Mfg. Co.
Trap Specialists
326-332 Rivard Street DETROIT, MICH.
Fig. 35

FROST QUALITY.
BRASS GOODS FOR PLUMBERS
A complete line covering every requirement
Original designs, finest finish, reliable and durable in service. Get our latest Catalog. It will assist you in ordering your brass supplies.
Frost Manufacturing Co. Kenosha, Wis.

DESOLVO and COLD WATER

is the plumber's best helper. Clears up obstructed pipes quicker, better and with less labor than by using any other method.

Keep a supply on hand. Your jobber has it.

THE CHAMBERLAIN CO.
PITTSBURGH, PA.

Canadian Distributors:
Chamberlain-Desolvo Co., 109 Church St., Toronto, Ont.
No Branch Offices in the United States
"K-K" Cleans Closet Bowls the Sanitary Way

GAUGE GLASS
IMMEDIATE DELIVERY
STANDARD AND HIGH PRESSURE
Our High Pressure Glasses have fused ends and are annealed by special process. Try them for highest steam pressures.
We manufacture Automatic Air Valves and Hot Water Thermometers.
MAGEE STEAM SPECIALTY CORPORATION
136-138 Beekman St., NEW YORK CITY

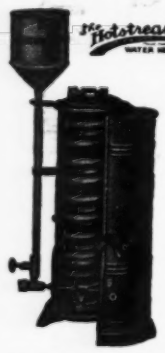
An AMERICAN Trap
for Every Lavatory

AMERICAN Cast N. P. Traps are sturdily built of highest grade material, finished perfectly smooth inside and out. Have deep seal and full sized waterway.

A wide variety of designs to suit every need. Send for Catalog.

Fig. 384.

AMERICAN SANITARY MANUFACTURING CO.
Abingdon, Illinois
Manufacturers of Fine N. P. Brass Specialties



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WICKLESS BURNER generates its own gas and throws a clean, powerful flame.

Easy to operate and guaranteed for satisfactory service.

Once sold—stays sold—no comebacks.

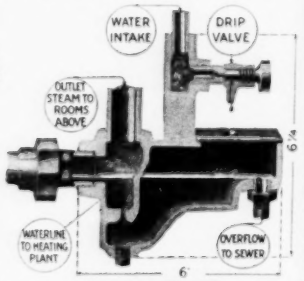
THE HOTSTREAM HEATER CO.
CLEVELAND
"Makers of Heaters that Heat"

(We also make a complete line of single and double copper coil, and cast iron coil gas water heaters.)

Onward Air Moistener

Sectional View shows Attachment to Heating Plants for moistening air. Above cut is part that is placed in Boiler or Furnace.

Write us for descriptive price-list.



Onward Mfg. Co.
Menasha, Wis.

Pat. Aug. 12, 1919.
Above ¼-inch of water flows into Steam Generator and steam returns in balance of space.

HOT WATER
Without Additional Cost

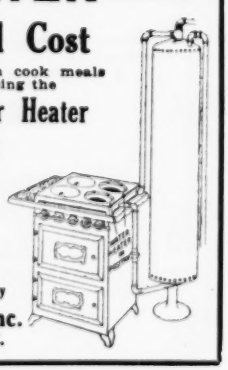
Show your customers how they can cook meals and heat water at the same time by using the

ELLIOTT Combination Water Heater and Gas Stove Top

Made in sizes to fit on top of any gas range. Not necessary to place boiler close to range. Can be attached to oil stoves if desired.

Most economical means of heating water ever devised.

Write for interesting proposition to plumbers.



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Elliott Water Heater Co., Inc.
9 Willoughby St., Brooklyn, N. Y.

St. Joseph, Sioux City, Indianapolis and Omaha report enormous increases in receipts of live stock by truck. In all, 881,000 head of live stock, or 24 per cent of all live stock received, were delivered there by motor truck in 1919."

The development of the industry to its maximum efficiency, the bank declares, depends upon prompt solution of two problems which now confront it. These are the questions of fuel supply and the provision of proper highways.

"The production of motor fuel has not kept pace with its consumption," the banks says. "Between 1909 and 1918 the number of motor vehicles in use in the United States increased about 1,700 per cent, while the domestic production of gasoline increased but 560 per cent and that of crude oil, the source, but 95 per cent. For the future, when the price of gasoline makes its extraction from shales and the use of substitutes commercially possible, there will probably be sufficient motor fuel at much higher prices than those of today. Motor transportation finds no threat of extinction in the fuel situation but only the necessity of modification.

"Highway construction and maintenance have always been a problem, which has now become so pressing as to cause alarm. Under the present system of road financing it is impossible to build all roads of a type which can bear heavy truck traffic. A good concrete road costs from $50,000 to $70,000 a mile to build, which is more than most communities can afford. The cost of providing highways for motor trucks is properly a part of their operating expenses, but at present the consumer of truck-transported goods shifts his share of this burden to the community. The truck has enjoyed an unfair advantage over other methods of transportation while thus subsidized by the tax payers, although subsidy during the period of development is quite in line with the history of other established means of transportation. The time is now approaching, however, when motor transportation must stand upon its merits.

"Trucks should be taxed in proportion to their destructive effect on roads, or rather in proportion to the cost to the community of providing roads for their use. Such restrictions would work for the benefit of motor transportation and are the only means by which the good roads which are vital to its future development can be secured."

The President is without power under existing laws "to shut out wheat imports," but he "apparently has certain powers under the Lever act to stop future trading in wheat," the Federal Trade Commission says in a special report to President Wilson, made public December 20th at the White House. The commission says "while evidence is not available that future trading is responsible for the decline in wheat prices, it does not appear that future trading in wheat as at present operating is of indisputable service to the grain trade." It suggests, however, that if regulatory action is to be employed, the question be considered by congress and that legislation "not connected with war powers be enacted." The commission tells the President that because of the failure of the Chicago Board of Trade to co-operate it was unable to obtain necessary information as to whether there had been large transactions in wheat future of a manipulative character.

The Inland Steel Co., Chicago, announces that its plants on January 1st will return to the ten to twelve hour day basis of operation. For the last year and a half operations have been on an eight hour basis, the company employing three shifts of workmen daily. The pay per hour will remain unchanged, and those working the longer hours will receive increased wages, but the number of men employed will be reduced.

Cleveland, Ohio.—Grimm & Ostendorf have the contract to install the heating and ventilating equipment in the $70,000 banking room at 10300 Euclid Avenue, for the Guardian Savings & Trust Co.

TECHNICAL SCHOOL TRAINING FOR THE HEATING PROFESSION.

(Continued from Page 610)

solved, when they were developed along the lines of the best average practice without regard to whether the best average practice could be improved or not. Heating engineers' conventions had few analytical presentations, probably because their value was not fully appreciated. Now they have so much valuable literature on the subject that it is found worth while to issue society journals to circulate the facts to the members. The sections of the technical press devoted to heating were largely descriptive in character, now we have periodicals wholly devoted to the subject and filled with the most up-to-the-minute analytical presentations. In a short time the conditions have wholly changed. We are now looking for rational analyses, not for a few, but for practically all of our problems. Where a few years ago the heating profession was purely a business proposition, it is now fast becoming a science. It is coming into its own and the technical school has had no little share in bringing this change about.

What the Schools Are Doing.

For my own satisfaction and for your information I am endeavoring to summarize the courses in heating and ventilation in the various technical schools of the country and give you an idea of what is being done. Questionnaires were sent to 57 institutions. Replies have been received from 75 per cent of these. Of the 43 replies received, 34 report courses in Heating and Ventilating and 9 report no courses. Of the 14 schools from whom no replies were received I have reason to believe that 6 have courses. Of the 34 courses reported 6 are elective and 28 are required. Of the 34 schools the hours allowed for any one school are:

Maximum.

Recitation and lecture	72
Laboratory and drawing	107
Outside work	some

This does not include one school which we will call A, which gives options in each of the four years totalling respectively 144, 324 and 312 hours.

Minimum.

Recitation and lecture	9
Laboratory and drawing	0
Outside work	0

Average for Schools.

	Hours
Recitation and lecture (34 schools including School A)	36
Laboratory and drawing (34 schools including School A)	51
Outside work (10 schools including School A)	81

Courses including.

Ventilation	30	Fan coil heating	30
Furnace heating	31	Central Station heating	25
Hot water and steam	33	Electric heating	13

It is interesting to note in this connection that Central Station heating, one of the more recent systems to be developed and one of the most localized in character is represented in 74 per cent of the courses reported.

The Future of the Work.

The field of heating and ventilation with all its present cultivation is as yet but superficially touched by experimental research. For a number of years engineers have been developing more consistent and workable theories but these theories were more or less speculative without actual experimental data to check them. In the general progress of the art the time has come to confirm or change our theories and in response to this appeal the research laboratories of the country are being offered and their energies coordinated so as to reach all parts of the field. I feel called upon to express my gratification at the spirit of cooperation existing among all forces avail-

THE INCOMPARABLE
NIEDECKEN
MIXER
SHOWERS
PATENTED
HOFFMANN & BILLINGS MFG. CO.
MANUFACTURERS SINCE 1855.
MILWAUKEE, U. S. A.

Donnelly Hot Water Safety Relief Valve
The spring of which does not come in contact with the water, and can be adjusted from 1 lb. to 200 lbs. pressure by any mechanic. It is a practical valve and deserves your attention.
Donnelly Low Down Flush Tank Valve
A positive flush every time. Will not unseat under any pressure. Eliminates use of rubber ball. Valve washer can be easily replaced by simply pressing rod out of guide.
Donnelly Mfg. Co. - Ten High Street Boston, 9 Mass.

SOMETHING ENTIRELY NEW IN
SILL-COCKS
Semi-Finished, Polished aluminum wheel Style N. Style O—Heavy rough pattern built for service.
STYLE N
Both shown in catalog D
STYLE O
KINSEY & MAHLER CO. Peoria, Ill.

"Mon-Seal"
"THE CLEANER CLOSET"
Patent Pending
Made of "Castex" Whitest Vitrified China. A closet of the washdown type but infinitely better.
See your nearest jobber
CHICAGO POTTERY CO.
1924-40 Clybourn Ave., Chicago

Watrous Patent Plumbing Specialties

Duo-Jet Closets and Flush Valves; Urinals, Self-closing Cocks; Liquid Soap Fixtures; Drinking Fountains, etc.

Send for our Catalog.

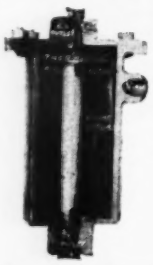
IMPERIAL BRASS MANUFACTURING CO.
510 S. Racine Ave. CHICAGO, ILL.

Makes Winter Selling Easy

Any automatic heater installed, will save 20% coal, or the same coal will give 20% more heat, by removing old furnace coil. ANY heater—but the Parrott goes best with this argument, because the coal saving is not offset by big gas bills. And our Plumber-proposition makes the plumber the most money. Write for it.

PARROTT HEATER COMPANY
224 21st STREET DETROIT, MICH.

Save 75% in Cost of Specialties!



The Holmberg Vacuum Steam Trap and System of Heating eliminates all air valves and unnecessary parts. Ejects all air from radiator and pipes. Saves 30% in fuel over single-pipe system. Is Fool-proof, Self-cleaning, Non-adjustable. Just what you want for new and overhauling jobs.

Write for particulars.

The Holmberg Steam Trap Co., Lindsborg, Kan.

Turner New Gasoline-Kerosene Torches

Burners are all constructed alike, containing all the patent features, however different in size according to price. Baffle in burner will generate low grade of gasoline or kerosene without adjustment. Adjusting needle eliminates enlarging of orifices that makes all burners useless. Flared tube will siphon correct amount of air regardless of adjustment or size of flame. The patent pump involves the parachute principle. Leather is free and will not wear. Drip cup made of sheet steel stamped, copper plated. Burner generates easily and produces more heat on less fuel than our old line. Our Triple Jet takes the place of our well known Double Jet, involving all the new patent features. A trial order will convince you. If not satisfactory, money refunded. All parts interchangeable. Jobbers will carry repairs—not necessary to be without torch—fix it yourself. With ordinary use a torch will last a lifetime.

No. 28 Quart torch, list $18.40.

No. 16 Pint torch, list $13.60.

The Turner Brass Works
Sycamore - Illinois, U. S. A.

able. All seem determined that the greatest amount of public satisfaction and good may be obtained from the least expenditure of national resources. In this work the universities have done good service and are now planning closer cooperative effort that there may be the broadest scope to the work with the least amount of duplication.

So far we have been thinking of the heating profession as a whole. But what of that part of the field represented by this organization. Judging from the returns to my questionnaire it is very evident that the schools believe in the kind of work you are doing. Since this is the most recently developed system and the one that is the least generally established over the country, it is a very significant fact that 25 out of 34 courses contain more or less instruction in this line. District heating along with all other public service corporations has been up against serious conditions the last few years. The shortage of fuel and supplies, and the uncertain labor market have not only curtailed but in many cases actually put out of business industries that should have been maintained. This is an unfortunate state of affairs, but we confidently believe that with the gradual settlement of our flood of economic difficulties following the war, district heating problems will also be solved satisfactorily. Some of these problems are administrative and the schools can serve but indirectly, but in those technical production and service problems that lend themselves to experimental and theoretical analysis they are going to assist to the limit of their ability. I wish to close, reaffirming my faith in the future of district heating and an assurance of such assistance as it is possible for me to give.

Selling First-Class Materials and Employing First-Class Mechanics Best Antidote for Mail Order House Competition.

In my opinion the way to overcome mail order competition is not to fight it. I have never yet lost an order to a mail order concern that I really wanted, writes William Sellers, of Connellsville, Pa.

Fighting competition of this kind is like fighting a socialist, the more you argue the question with him the more he swells up and grows bigger in his belief that Eugene V. Debs is the greatest man these United States ever produced.

Too many of our good brethren try to put across the same kind of stuff on their customers as the mail order house furnishes, and of course this is a grave mistake.

The way to overcome mail order competition is by handling first class materials, employ only first class mechanics, do the work right and demand the price for the service.

If your customer is thinking of making such a purchase be perfectly frank and explain that it is impossible to compete with this kind of competition on acount of the grade of the materials involved and the value of a local reputable concern who will stand back of the work with a guarantee that has some value.

I have no patience with a plumber who will stand around and complain about the mail order house. Deliver the quality. Get the price, and you will find that "There is a God in Israel."

All of the textile mills of Maine and practically all in Rhode Island put into effect on December 20th the 22½ per cent wage reduction recently announced in Lawrence, Lowell and New Bedford and in many smaller New England mill centers. The reduction will apply to about 100,000 operatives.

Nearly one-half of the nation's overseas commerce in the past fiscal year was carried in American ships, Secretary Alexander shows in his annual report made public this week. The overseas trade reached the unprecedented total of $11,875,424,000, and $5,071,905,000 of it was carried in American-owned vessels as against $368,359,000 carried in American bottoms the year before the war.

The Responsibility of One Guarantor Not Liable for Failure to Receive Material, Causing Another to Breach His Contract.

In a Texas case under a contract whereby defendant guaranteed that the contractors "will pay for the brick under and according to the contract," the Court of Civil Appeals has held that defendant would not be liable for damages arising from failure of contractors to promptly receive all the brick. Further the court said the guarantor is entitled to a strict construction of his contract, and can stand upon its very terms (Acme Brick Co. v. West, 215 S. W. 476).

But the most interesting and important question in the case is that of the responsibility of one for causing another to break his contract. Here the Brick Company alleged that the defendant caused the contractors to break their contract with it. But the company did not allege or charge that defendant, in causing a breach of the contract on the part of the contractors, acted through malice or in bad faith.

Now the court said that the Supreme Court of Texas had reviewed both English and American decisions on this point, in another case, most of which decisions seem to require allegation and proof of malice in order to bind a third party for damages arising from the breach of a contract brought about by the third party, the Texas court holding:

"We are of opinion that the rule that, where one knowingly induces another to break his contract with a third person, such third person has a right of action against the one so causing the breach for any damages resulting to him by such breach, is supported by a decided preponderance of authority and by the better principle.

"It seems to us that, when a party has entered into a contract with another to do or not to do a particular act or acts, he has as clear a right to its performance as he had to his property, either real or personal, and that knowingly to induce the other party to violate it is as distinct a wrong as it is to injure or destroy his property."

In still another case this same court has stated as a rule:

"That one who willfully, and without legal justification or excuse, interferes so as to bring about a breach of a contract between others, is guilty of an actionable wrong is no longer a question in this court."

This, says the Court of Civil Appeals, is obviously a different rule or a different statement of the same rule; and concluded that, in either view, a "wrongful" interference with a contract would carry with it willfullness and injustifiableness and inexcusableness.

Strangers to a contract owe to the parties the duty not to wrongfully interfere with its performance, and a violation of the duty is a tort says one writer, who believes the weight of authority and better reason would sustain the rule that malice must enter into the interference with a contract by a third party, although he also believes that a wrongful act includes malice, his definition of malice is as follows:

"The term 'malicious,' in the sense here used, does not mean a personal ill will, but merely a wrongful purpose to injure, or to gain some advantage at the expense of another; and unreasonable and wrongful act done intentionally, without any just cause or excuse." (Elliott on Contracts. 2692.)

However, the question of malice seems to be eliminated from cases of the character here in suit by the Supreme Court, said the court in the instant case, and judgment on the point against the Brick company was reversed.

PORCELA

The Bath Tub Cleaner

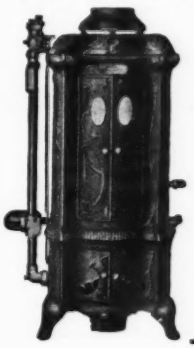
Contains no grit.
No acid.
Keeps fixtures like new.

Most contracting plumbers use Porcela and recommend it to their customers.

If you haven't Porcela in stock order from your jobber. Write us for free sample can and descriptive folders.

PORCELA-RADAX CO.
NEW BRIGHTON, PA.

A Household Word



The name "Humphrey" in connection with Automatic Gas Water Heaters is known the country over. The dealer and plumber who sell it get the advantage of this prestige which results in easy sales and satisfactory service.

Try the Humphrey on your next water heater job.

Write for full description

HUMPHREY COMPANY
Div. Rund Mfg. Co.
Kalamazoo, Michigan

"BRE HYGIENIC" SEAT

PATENTED DECEMBER 7, 1915
No. 213

Write for descriptive circular telling why this steel reinforced "BRE HYGIENIC" seat, open front and back is guaranteed not to come apart.

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The Kelly Controller

FOUR SAFETY DEVICES IN ONE

Replaces a non-return valve, steam separator, stop valve, and alarm. Write for details.

Manufactured by
THE KELLY CONTROLLER CO.
175 WEST JACKSON BLVD., CHICAGO

Tested, Approved and Sold Exclusively by
THE FAIRBANKS COMPANY
ADMINISTRATIVE OFFICES: NEW YORK
Stock carried in 23 principal cities

Tank Fittings of Quality

1856 "McSHANE" 1920

The ORIGINAL Compound Lever Ball Cock, Elevated, Low-Down, Top and Bottom Supply Tank Levers and Valves.

McSHANE BELL FOUNDRY CO.
BALTIMORE, MARYLAND

The Farms of Your Community Are Your Great New Field

Electricity will soon be as common on the farm as it is in town. The dealer in Paul Water Systems who realizes this and makes himself known throughout his community as the authority on water systems for the farm IS THE MAN WHO WILL CASH IN BIG. If you are not yet a Paul Dealer, send for full particulars. If you are a Paul Dealer, get a new vision of this greater future—and get ready for bigger business. Send at once for folder, "Water Systems for Farm and Home."

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Choose a Winner

The successful operation of a closet tank depends upon the fittings. Be sure the tanks you install are equipped with the

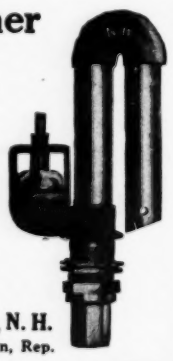
N. H. TANK VALVE

and you can be assured of efficient service.

Valve made full size. Guaranteed to work all properly designed siphon closets.

Write for complete details.

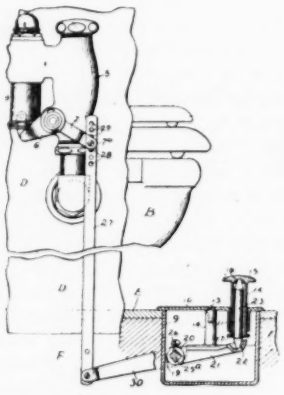
EXETER BRASS WORKS, Exeter, N. H.
New York Office: 50 Cliff St. Henry Stein, Rep.



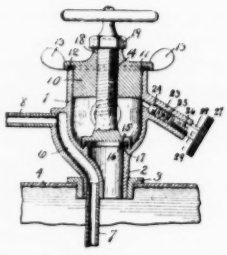
Patents

Plumbing Department.

1,361,060. Valve-Operating Mechanism. Arthur M. Houser, Chicago, Ill., and William B. Morris, Philadelphia, Pa., assignors to Crane Co., Chicago, Ill., a corporation of Illinois. In a device of the character described, the combination of a housing having a top plate and an inner bearing, a lever journaled in said bearing, said top plate provided with a depressible pedal member comprising a tubular member extending above the plane of the plate and closed at its upper end, and a self-centering thrust pin loosely housed in said tubular member and interposed between the free end of said lever and the closed upper end of said member.

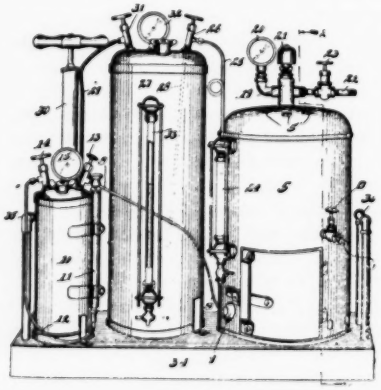


1,361,060.



1 361,418

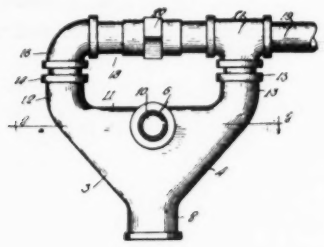
1,361,418. Filler-Valve. Alexander Tolchan, Detroit, Mich. A filler valve for pressure tanks comprising a funnel shaped valve body having a discharge opening and a valve to close the opening, said valve having a discharge conduit for the tanks in its wall independent of said discharge opening in the valve, a pipe extending down into the tank from said conduit, and a safety valve connected to said valve body.



1 361 023.

1,361,023. Pipe-Thawing Apparatus. William S. Darley, Chicago, Ill. A pipe thawing apparatus comprising a boiler; means for heating said boiler; means for withdrawing heated fluid from said boiler and injecting it into a frozen pipe; and means for automatically maintaining a substantially constant level in said boiler, substantially as described.

1,361,124. Plumbing-Fitting. George J. White, Chicago, Ill. In a fitting of the class described, the combination with an approximately triangular hollow member having a horizontal top wall, parallel side walls and towards each other inclined end walls, of vertically disposed air-inlet passages between the

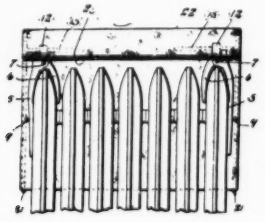


1,361,124

ends of said top wall and said inclined end walls, horizontal and toward each other directed sewage-inlet passages, and a vertical wall between said sewage-inlet passages.

Heating Department.

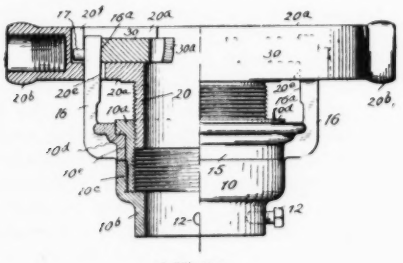
1,361,372. Radiator-Shield. John M. Dougherty and Harry C. Tabler, St. Louis, Mo. In combination with a radiator, a pair of brackets adapted to grip the radiator near its ends, said brackets being provided with non-circular apertures at their upper extremities, shield supporting members comprising



1,361,372.

a rod having a non-circular portion secured in the aperture of each bracket, said rods extending transversely of the radiator, and being bent upwardly and to the front of the radiator forming a loop from where they are bent to the rear over the radiator and downwardly, and a shield secured to said shield supporting members.

1,361,400. Diestock. Herman W. Oster and Russell B. Tewksbury, Cleveland, Ohio, assignors to The Oster Manufacturing Co., Cleveland, Ohio, a Corporation of Ohio. In a die stock, the combination of a work holder formed of two parts, viz., a tubular rear member having an enlarged internally



1,361,400

threaded, concentric cylindrical recess in its front end and a tubular rear member which is internally threaded and is externally threaded at its rear end and screwed into the threaded recess in the rear member against the bottom of said threaded recess, and which has an external flange at its front end and an unthreaded cylindrical external surface between the said flange and threaded end, thereby forming a circumferential groove on the outer surface of said work holder, a tubular die

Ten Days' Free Trial

Past performance has given us great confidence in the MARTIN Portable Vise Stand and Pipe Bender. We want you to try it out for ten days at our expense. If it doesn't live up to all our claims, you may return it and we will pay charges both ways.

After using this machine for ten days, in the shop or out on the job, we doubt if you would give it up for twice its cost. Will you make the experiment? Order from your jobber.

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626 E. 2nd St., Owensboro, Ky.

The DETROIT Torch

A Marvel for Service and Durability

Highest quality brass tank, heavily reinforced, powerful improved burner, strong, efficient pump, hook and support for holding soldering coppers.

This torch eliminates the troubles that attend the use of the old-style torch.

Get a "DETROIT" from your jobber. You will be more than pleased with it.

Detroit Torch & Mfg. Co., Detroit, Mich.

The Boston

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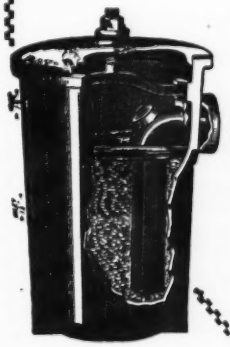

Is an ideal trap for use under kitchen sinks and in small restaurants.

The BOSTON Trap prevents clogged pipes by separating the grease from waste water and retaining it. Removing grease from Trap is a simple matter. The extra large handhole is a distinctive feature of the BOSTON Trap.

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It places at your disposal the benefit of knowledge gained by over eighteen years of experience in the heating engineering practice.

Illustrates and describes the line of Wiley Improved Vapor Heating Specialties.

If you did not receive a copy, write for one.

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WHALE-BONE-ITE
CLOSET SEATS
To recommend this efficient seat means giving your customers the best the market affords.
— INDISPUTABLE QUALITY
— IMPERVIOUS — ACID PROOF
— Types for all regular bowls.
Ask your jobber or Seat Dept.
THE BRUNSWICK-BALKE-COLLENDER CO.
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Perfect Temperature Control
with the
MILWAUKEE
Shower Bath
Nickel plated shower head. Concealed mixing valve with china handle and nickel plated dial plate.
Built for service.
Ask your jobber for the Milwaukee Shower Bath.
Made by
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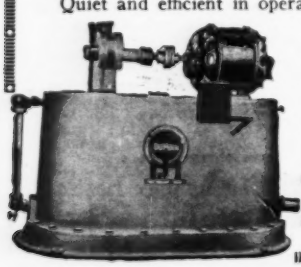
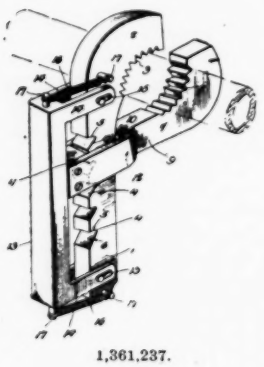
Milwaukee, Wisconsin
Fig. C25 Fig. C40

INBRACO
BALL COCKS
FLUSH VALVES
TANK TRIMMINGS
THE INDIANA BRASS CO.
FRANKFORT, INDIANA

DUMOIN Automatic Condensation Pump and Receiver
Takes care of the returns, either above or below the floor line, in vapor or gravity systems.
Quiet and efficient in operation.

Outfits furnished for 1,000 to 10,000 sq ft. radiation and for 10 and 20 lbs. pressure.
Write for full particulars.
Thompson Mfg. Co.
Des Moines, Iowa

carrier which screws into said work holder and has an outwardly projecting flange at its front end, said flange being provided with diametrically opposed radial guide-ways having overhanging integral flanges, and said flange being also formed with holes through it which intersect the rear ends of said guide-ways, a one-piece ring which is rotatably mounted in the above-mentioned circumferential groove on the work holder, and which has integral die controlling arms that pass through and slidably fit the holes in the flange of the die carrier, and which have inclined die engaging inner faces, with dies radially movable in said guide-ways which at their rear ends engage the inclined faces of said arms.

1,361,237. Wrench. Joseph B. Fleeror, Seattle, Wash. A wrench comprising a fixed jaw formed with notches, a sliding jaw having a tooth to engage any one of said notches, a keeper movably mounted on the fixed jaw and adapted to engage the end of the movable jaw when in operative position, and spring means for normally holding the keeper in operative position.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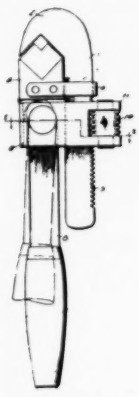
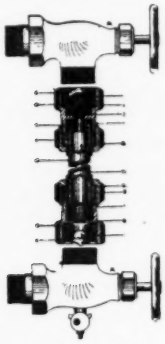

1,361,749.

1,361,749. Pipe-Wrench. Gilbert Cazenave, Detroit, Mich. A wrench comprising a handle, a trunnion formed on one end of the handle and including cylindrical end portions and an intermediate cam portion, a support having opposite sides formed with circular holes forming bearings for said cylindrical end portions of the trunnion and having an intermediate recess for the accommodation of said cam portion, said recess extending to one edge of the support, said support being formed with an opening and spaced ears, a shank slidable through said opening and being formed with a fixed jaw, the outer edge of the shank being formed with rack teeth, a worm journaled between said ears and meshing with the rack teeth, a V-shaped yoke slidable upon said shank, and a jaw between the arms of the yoke and engageable by said cam portion of the trunnion.

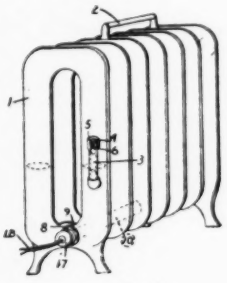
1,366,303. Automatic Shut-off for Watergage Glasses. Lewis I. Breakey, Marshall, Mich. A safety automatic shut-off for gage glasses, comprising couplers 4 and 5, special gaskets 9, said couplers being exteriorly threaded at one end, and interiorly threaded at the other end, interiorly threaded packing nuts 10 and 10, the exterior threads of each coupler being adapted to receive one of said packing nuts which holds one of said special gaskets, a glass tube 12 seated in said gaskets, the interior threads of said couplers being adapted to receive the fixtures A and A to the boiler or column, the said upper coupler 4 being provided with a short tube 11, which extends into the glass, the upper end of said tube having a ball seat which has two bypaths, the lowering coupler 5 being provided with a ball seat, balls to co-operate with said seats and supporting means for said balls, substantially as specified.

1,361,795. Heat-Distributer. George E. Latham and William F. Whiteman, San Francisco, Calif. A portable heat distribu-

ter comprising a plurality of heating members connected at the bottom and adapted to contain water, a combination safety valve and gage connected with the heating members, a detachable heating element secured in one of the heater elements comprising a tubular member having a risistance wire therein,



1,361,303



1,361,795.

said tubular member being secured to an internal and external threaded bushing and electric contacts for said heater attached to said bushing.

GOVERNORS DISCUSS HOUSING.

Governor Alfred F. Smith of New York advocates a state housing plan instead of federal legislation. At a conference of governors from all states of the Union at Harrisburg, Pa., Governor Smith's paper was read by Edward F. Boyle, member of the New York Reconstruction Commission, the governor being unable to attend.

Governor Sproul of Pennsylvania proposed that mortgages be exempt from taxation. Other governors were so impressed that they took up the question with representatives in Washington, it is said.

"I believe the situation would change over night if preferment were obtained for mortgages which would wholly or partly relieve them of the income tax," said Governor Sproul.

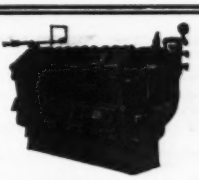
"It is time this country made adequate provision to meet the problem," was the message of the New York governor.

"I do not believe federal legislation alone would meet the situation. The whole problem is too colossal to be solved by a single bureau at Washington. The individual states should work out systems of state credits for state purposes.

"When we can solve a national housing policy with the control centered in each state people will be in more direct and democratic control of their housing funds and their application to local conditions.

"In America our housing laws have been negative laws—restrictive laws. But in the light of the present emergency we see that the state, here and elsewhere, must offer a helping hand and must find a constructive solution if we are to have homes."

"I have not given sufficient study as yet to this means of relief, which is proposed by Governor Sproul of Pennsylvania," said Governor Coolidge, "but it seems to me that the income tax on mortgage investments, which is a comparatively small affair, is the only federal impost which would be affected by any exemption legislation. I understand that the proposal would be to place mortgages in a preferred class, somewhat on a par with state and municipal bonds as investments. In Massachusetts we have enacted legislation solely with a view to protecting the householder who pays rent. Purchasers of houses are chary about building at present prices, because none seems to know whether or not the building market is coming down, and, if it is coming down, to what extent the reduction will reach."

ECONOMY  EFFICIENCY

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Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler
Saves Fuel Labor

Manufactured only by
PIERCE, BUTLER & PIERCE MANUFACTURING CORP.
Brooklyn Boston Worcester NEW YORK Detroit Syracuse Newark Philadelphia Baltimore Washington

FOR lasting quality and true capacity use *"KOVEN"* Pure Iron, Double Row Riveted, Galvanized Range Boilers, or *NACO* Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

L. O. KOVEN & BRO.
50 CLIFF STREET NEW YORK

Economy Scale Remover Co., Inc.
CHICAGO HEIGHTS, ILLINOIS
Manufacturers of

Economy Boiler Seal
For making permanent repairs on cracked, leaky boilers. Saves buying new sections.
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For automobile radiators and water jackets.
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For removing scale from boilers.
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WRITE FOR FOLDERS

Vapor-Vacuum Heating
Trade Mark Registered
Kriebel V System
Guaranteed to reduce coal bills 25%. In many instances it has effected a saving of 33⅓%.
Prof. Jones, Dean of Yale College, writes in part:
"After a year's trial, and particularly since the recent period of cold weather, I want to express my satisfaction with the way in which your system works. I have no trouble in keeping my home at a normal temperature of 70 degrees, even if the thermometer outside registers zero or below."
Every Kriebel System you install adds another name to your list of satisfied customers.
Write for booklet describing System
VAPOR-VACUUM HEATING CO.
Otis Bldg. PHILADELPHIA, PA. 101 Park Ave. NEW YORK

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WANTED—AN EXPERIENCED MAN in a plumbing and heating office, competent bookkeeper, to take charge of buying and selling and to take full charge of office. Address 240, "Domestic Engineering," Chicago. 12-25-1-1

SALESMAN WANTED BY NORTHERN New Jersey jobber of Plumbing and Heating supplies to represent them in Newark, N. J., and vicinities; previous experience in this territory preferred; state particulars. Address 238, "Domestic Engineering," Chicago. 12-25

SALESMAN WANTED—CAPABLE, RELIABLE experienced salesman desired for state of Illinois for our high grade line of brass goods for Plumbing Trade. Commission only. References required. Confidential. Address 236, "Domestic Engineering," Chicago. 12-25-1-1

WANTED—TWO LIVE SALESMEN FAMILIAR with plumbing and heating supplies. Established territory. One in Central and Western Ohio. One in Central Indiana. Address 241, "Domestic Engineering," Chicago. 12-25

WANTED—SERVICES OF AN EFFICIENT mill supply salesman for large city in New Jersey, thoroughly versed in the business. Good salary to the right party. Address 228 "Domestic Engineering," Chicago. 12-11/25

WANTED—HIGH GRADE TRAVELING salesman for plumbing and heating lines. Salary and commission. Western Supply Co., Lincoln, Nebraska. 12-11/25

WANTED—HIGH GRADE SALESMAN for large manufacturer to travel from Buffalo east covering Eastern States and South as far as Baltimore. Must be fully acquainted with jobbing trade in territory mentioned. Good position for right man. Address 226 "Domestic Engineering," Chicago. 12-11-tf

WANTED—RADIATOR AND BOILER salesmen, with thorough knowledge of the heating business. Pittsburgh, Philadelphia, Eastern Pennsylvania, and Maryland. Address Union Radiator Co., Johnstown, Pa. 11-13-tf

Situations Wanted

LIVE WIRE HEATING AND VENTILATING engineer would like to connect with progressive house. Capable executive, estimator, designer, etc., can handle men. Will take full charge of that department. Will consider buying interest with right people. Address 221, "Domestic Engineering," Chicago. 12-4-25

SITUATION WANTED—EXPERIENCED man, plumbing, heating supplies. Ten years, quotation, invoice, general office experience. Address 234, "Domestic Engineering", Chicago. 12-18

SITUATION WANTED—ESTIMATOR—Plumbing and Heating. I am a heating engineer 29 years old and would like to connect with a good house with opportunity of partnership. Address 237, "Domestic Engineering," Chicago. 12-25

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FOR SALE—VAILE-KIMES WATER lift. Fifty pounds pressure. Write W. P. Eichenlaub, Spencer, Indiana. 12-18-25

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GWILLIAM SUPPLY CO.

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WE HAVE A GOOD MARKET FOR your excess couplings. Republic Pipe & Iron Corp., 1185 Flushing Ave., Brooklyn, N. Y. 10-9 tf

TIME SHEETS, JOB TICKETS, ESTIMating blanks, illustrated stationery, blotters, etc. For plumbers. Reasonable. Send for catalog and price list. Prompt service. L. Fink & Sons Co., Inc., Laurel Springs, New Jersey.

WILLIAMS BRASS HANGERS
For Copper Eaves Trough. Increase Prestige. Now 20c Each. Jobbers or
WILLIAM A. X. WILLIAMS
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Want a Sample?

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

CHICAGO PIPE CO., MANUFACTURers, soil pipe and fittings, bends, drum traps. Send for prices. 838 W. Kinzie St., Chicago, Ill. 12-18-⅛

Government Proposals

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., December 9, 1920.—Sealed proposals will be opened in this office at 3 p. m., Jan. 7, 1921, for new Fire Service Mains, etc., at the United States Marine Hospital, New Orleans, La., in accordance with specification and drawing, copies of which may be had at this office or at the office of the Custodian, New Orleans, La., in the discretion of the Supervising Architect, Jas. A. Wetmore, Acting Supervising Architect. 12-18-25

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., Dec. 14, 1920.—Sealed proposals will be opened in this office at 3 p. m., Jan. 6, 1921, for the mechanical equipment of the laundry building for the United States Marine Hospital at New York, N. Y. (Stapleton), in accordance with drawings and specifications, copies of which may be obtained from the Supervising Chief Engineer, room No. 731, United States Custom House, New York, N. Y., or at this office, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 12-25

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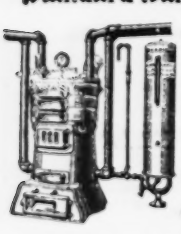
Standard Sanitary Mfg. Co., Pittsburgh

¶ If you want a salesman, foreman or workman, advertise in the Classified Department of *"Domestic Engineering."* Used by the best houses in the trade.



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has proven its superiority by years of efficient, satisfactory service.

The use of "READING" Specialties insures economy in fuel and uniform heat—two points that make the steamfitter strong with his customers.

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THE READING HEATER & SUPPLY CO., INC. Reading, Pa.